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NATURAL HISTORY,

GENERAL AND PARTICULAR,

BY THE

COUNT DE BUFFON.

TRANSLATED INTO ENGLISH,

ILLUSTRATED

WITH ABOVE THREE HUNDRED COPPER-PLATES,

AND OCCASIONAL

NOTES AND OBSERVATIONS,

By WILLIAM SMELLIE,

MEMBER OF THE ANTIQUARIAN AND ROYAL SOCIETIES OF EDINBURGH.

THE THIRD EDITION,

IN NINE VOLUMES.

VOL. VII.

LONDON:

PRINTED FOR A. STRAHAN, AND T. CADELL IN THE STRAND.

M.DCC.XCI.

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NATURAL HISTORY.

The BUBALUS, or CERVINE ANTILOPE, and other Animals allied to the GAZELLES and GOATS.

THE BUBALUS*.

IN the article Buffalo, we remarked, that the modern Latins had improperly applied to it the name *bubalus*. This appellation anciently belonged to the animal we are now treating of, whose

* The porcine antilope, with horns bending outward and backward, almoſt cloſe at their baſe, and diſtant at their points; twiſted and annulated; very ſtrong and black; ſome of them are above twenty inches long, and above eleven in girth at the baſe. The head is large, and like that of an ox. The eyes are placed very high, and near the horns. The form of the body is a mixture of the ſtag and heifer. It is of the ſize of the former. The tail is rather more than a foot long, and terminated with a tuft of hair. The colour is a reddiſh brown; *Pennant's Synopſ. of Quad.* p. 37.

Βουβαλος, in Greek; *bubalus*, in Latin; *bubale*, in French.

Βουβαλος, *Ariſtotelis* Genus id fibrarum.——Cervi, damæ, *Bubali*, et aliorum quorumdam ſanguini deeſt, quocirca eorum

whoſe nature is very different from that of the buffalo. In ſome external qualities it reſembles the ſtag, the gazelles, and the ox. It reſembles the ſtag in ſize and figure *, and particularly in the form of its limbs: But its horns are permanent, and nearly conſtructed like thoſe of the largeſt gazelles, to which it is allied by this character as well as its natural diſpoſitions. Its head, however, is much longer than that of the gazelles, or even that of the ſtag. In fine, it reſembles the ox in the length

ſanguis non ſimiliter atque cæterorum concreſcit.——*Bubali* ſanguis aliquantulo ſpiſſatur; quippe qui proxime ovillo aut paulo minus conſiſtat; *Ariſt. Hiſt. Anim. lib.* iii. *cap.* 6.—— Bubalis etiam capreiſque interdum cornua inutilia ſunt; nam etſi contra nonnulla reſiſtunt et cornibus ſeſe defendunt, tamen feroces pugnaceſque belluas fugiunt; *Idem, de partibus Animal. lib.* iii. *cap.* 11.

Bubalus. *Plinii.* Bubalum gignit Africa, vituli cervive quadam ſimilitudine; *Hiſt. Nat. lib.* viii. *cap.* 15.

Βυβαλιδες; *Ælian. lib.* iii. *cap.* 1. *lib.* v. *cap.* 48. *lib.* vii. *cap.* 47. *et lib.* xiii. *cap.* 4.

Βυβαλος. *Oppiani.* Dorcade platycerote corpore inferior, cornua non ramoſa ſicut cervis et capreis, ſed rupicaprarum cornibus ſimilia, tum ſitu, tum in averſam partem retortis mucronibus, ad pugnam fere inutilia; *De Venatione, lib.* ii.

Buſephalus *Caii, apud Geſnerum*; *Hiſt. Quad. p.* 121.

Bubalus Capreolus Africanus; *Horatius Fontana, apud Aldrovandum, de Quad. Biſul. p.* 364 & 365. Ubi vide figuram.

Vache de Barbarie; *Memoires pour ſervir à l'Hiſtoire des Animaux, part.* ii. *p.* 24. *fig.* 39.

Elan; *Deſcription du Cap de Bonne-eſperance, par Kolbe, tom.* iii. *chap.* 4.

Bucula cervina; *Caii Opuſc. p.* 63.

Antilope Bubalus; *Pallas Miſcel. ſpicil.* 12.

* See the figure and deſcription of the Barbary cow in the *Mem. pour ſervir à l'Hiſt. des Animaux, part.* ii. *p.* 24. *tab.* 39.

of

of the muzzle, and in the diſpoſition of the bones of the head, which, as in the ox, jut not out behind farther than the frontal bone. Theſe relations in external ſtructure, joined to its ancient name being forgotten, are the reaſons why, in modern times, it has obtained the compound denominations of *buſephalus*, *bull-ſtag*, bucula-cervina, *cow-hind*, *Barbary cow*, &c. Even the name *bubalus* comes from bubulus, and has been applied to it on account of the ſimilarity of this animal to the ox.

The head of the bubalus is narrow; the eyes are placed very high; and the front is ſhort and narrow. The horns are large, black, permanent, and furniſhed with large rings. They ſpring near each other, but recede conſiderably at their extremities. They bend backward, and are twiſted ſpirally *. His ſhoulders are ſo high, that they form a kind of bunch on the withers. The tail is nearly a foot long, and garniſhed with a tuft of hairs at the point. The ears are ſimilar to thoſe of the *antilope*. Kolbe † has

* See *Mem. pour ſervir à l'Hiſt des Animaux, part.* ii. *p.* 24. *tab.* 39.

† The African elk.—Its head is beautiful, and reſembles that of the ſtag, but it is ſmaller in proportion to the ſize of the body. Its horns are about a foot in length. Near the head they are rugged, but ſtraight, uniform, and pointed at the extremities. Its neck is free and beautiful. The upper lip is a little larger than the under. Its limbs are long, thin, and delicate; and its tail is about a foot in length. The hair which covers its body is ſoft, ſmooth, and of an aſh-colour. The African elk weighs about four hundred pounds; *Deſcript. du Cap de Bonne-eſperance, par Kolbe, tom.* iii. *chap.* 4.

given to this animal the appellation of *elk*, though it has no other reſemblance to the elk than by its hair being more ſlender at the root than in the middle; or at the point, which is peculiar to theſe two animals; for, in almoſt every quadruped, the hair is always groſſer at the root than in the middle, or at the point. The hair of the bubalus is nearly of the ſame colour with that of the elk, though it is much ſhorter, ſofter, and leſs buſhy *. Theſe are the only reſemblances between the elk and bubalus; for they differ in every other particular. The horns of the elk are larger and heavier than thoſe of the ſtag, and

* The habit of body, the legs, and the neck of this animal, give it a ſtronger reſemblance to a ſtag than to a cow, of which laſt he has only the horns, and even theſe differ conſiderably from thoſe of the cow. They ſpring very near each other; becauſe the head is here extremely narrow; but, in the cow, the front is very large. They were about a foot long, black, bended backward, twiſted ſpirally, and ſo uſed before and above, that the elevations of the ſcrew were almoſt entirely effaced. The tail exceeded not thirteen inches in length, including the tuft of hair at the point, which was three inches long. The ears reſemble thoſe of the gazelles, the inſide being garniſhed, in ſome places, with white hair; the reſt was naked, and exhibited a ſkin perfectly black and ſmooth. The eyes were high, and ſo near the horns, that the head ſeemed to have no front. There were only two very thin, ſhort teats, which render this animal very different from our cows. The ſhoulders were ſo high, that they formed a kind of bunch on the withers.——This animal ſeems rather to be the bubalus of the ancients than the ſmall African ox deſcribed by Belon; for Solinus compares the bubalus to the ſtag; Oppian gives him horns turned backward; and Pliny ſays, that he partakes of the calf and ſtag; *Mem. pour ſervir à l'Hiſt. des Animaux, par.* ii. *p.* 25.

are

are likewiſe renewed annually. The horns of the bubalus, on the contrary, never fall off, but continue to grow during life, and reſemble, in figure and texture, thoſe of the gazelles. He reſembles the gazelles ſtill more in the figure of his body, the lightneſs of his head, the length of his neck, the poſition of his eyes, ears, and horns, and in the form and length of his tail. The gentlemen of the Academy of Sciences, to whom this animal was preſented under the name of the *Barbary-cow*, and who adopted that denomination, have not failed to recognife it to be the *bubalus* of the ancients. Though we have rejected this compound appellation, we heſitate not to copy here their exact deſcription, by which it appears that this animal is not a gazelle, a goat, a cow, an elk, or a ſtag *, but that it is a particular and diſtinct ſpecies. Beſides, it is the ſame with that deſcribed by Caius †, under the name of *buſelaphus;* and I was ſurpriſed that the gentlemen of the Academy omitted this remark,

* The bubalus is ſeparated from the ſtag kind by two eſſential characters: 1. The horns never ſhed: 2. The bubalus has a gall-bladder, which is wanting in the ſtag, the fallow-deer, the roebuck, &c. 'The gall-bladder,' ſay the gentlemen of the academy, 'was placed on the right ſide; its internal half was 'attached to the liver, and the membrane which formed the 'external half was thin, delicate, and folded, being entirely void 'of gall;' *Mem. pour ſervir à l'Hiſt. des Animaux, par.* ii. *p.* 29.

† Ex Mauritaniæ deſertis locis (inquit *Joh. Caius Anglus,*) ad nos adventum eſt animal biſulco veſtigio, magnitudine cervæ, forma et aſpectu inter cervam et juvencam; unde ex argumento voco *Buſelaphum* ſeu *Bovi-cervum*, *Moſchelaphum* ſeu *Buculam-cervinam*;

mark, as all the characters aſcribed by Caius to his *buſelaphus* correſpond with their Barbary-cow.

In the Royal Cabinet there is, 1. A ſkeleton of the bubalus, which had been deſcribed and diſſected by the gentlemen of the Academy; 2. A head, which is much larger than that of the ſkeleton, and the horns are alſo thicker and longer; 3. A portion of another head, with horns as large as the former, but whoſe figure and direction are different. Hence, in the bubali, as well as in the gazelles, antilopes, &c.

vinam: Capite et aure longa atque tenui, tibia et ungula gracili ut cervæ, ita ut ad celeritatem videatur factum animal. Cauda pedali longitudine et paulo amplius, forma caudæ vaccinæ quam ſimillima, ſed brevitate accedens propius ad cervinam: Natura quaſi ambigente cervæne eſſet an vaccæ, per ſuperiora rufa et lenis, per ima nigra et hirta. Colore corporis fulvo ſeu ruſo undique pilo, ſeſile cuteque æquato, in fronte ſtellatim poſito, at ſub cornibus per ambitum erecto: Cornibus nigris, in ſummum levibus, cætera rugoſis, rugis ex adverſa parte ſibi vicinioribus, ex averſa ad duplam aut triplam latitudinem a ſe diductis. Ea cornua primo ſuo ortu digitali tantum latitudine diſtantia, paulatim ſe dilatant ad mediam uſque ſui longitudinem et paulo ultra, qua parte diſtant palmos tres cum ſemiſſe, tum ſe reducunt leviter et recedunt rurſum in averſum, ita ut extrema cornua non diſtent niſi palmorum duorum digitum trium et ſemiſſis intervallo: Longa quidem ſunt pedem unum et palmum unum craſſa, vero in ambitu ad radices palmos tres. Caput a vertice, qua parte linea nigra inter cornua divitur, ad extremas nares, longum eſt pedem unum palmos duos et digitum unum; latum qua eſt latiſſimum, in fronte videlicet paulo ſupra oculorum regionum, digitos ſeptem: Craſſum in ambitu qua maximum eſt pedem unum et palmos tres. Dentes habet octonos, ordine caret ſuperiori et ruminat; ubera ſunt duo, corpori æquata, quo conſtat juvencam eſſe necdum fœtam; *Caius de Buſelapho. Geſner. Hiſt. Quad. p.* 121.

there

there are varieties in the ſize of the body and the figure of the horns. But theſe differences ſeem to be too inconſiderable to conſtitute diſtinct ſpecies.

The bubalus is very common in Barbary, and in all the northern parts of Africa. He has nearly the ſame diſpoſitions with the antilopes; and, like them, his hair is ſhort, his ſkin black, and his fleſh is good to eat.

The CONDOMA, or STRIPED ANTILOPE*.

THE Marquis de Marigny, who never loſes an opportunity of encouraging arts and ſciences, ſhowed me in his cabinet the head of an animal, which, at firſt ſight, I took to be that of a large bubalus. It reſembles the head of our largeſt ſtags. But, inſtead of ſolid horns,

* The ſtriped antilope has ſmooth horns twiſted ſpirally, compreſſed ſidewiſe, with a ridge on one ſide following the wreaths; they conſiſt of three bends, are three feet nine inches long, and of a pale brown colour; they are cloſe at the baſe, and two feet ſeven inches and a half diſtant at the points, which are round and ſharp. In the upper jaw, there is a hard, horny ſubſtance diſpoſed in ridges. The length of the animal is nine feet, and the height four. The body is long and ſlender; the legs are ſlender; the face is brown, and marked with two white lines proceeding from the corner of each eye, and uniting above the noſe. The colour in general is of a reddiſh caſt, mixed with gray. From the tail, along the top of the back, to the ſhoulders, there is a white ſtripe; from this are ſeven others, four pointing towards the thighs, and three towards the belly. On the upper part of the neck is a ſhort mane. Beneath the neck, from the throat to the breaſt, are ſome long hairs hanging down. The breaſt and belly are gray. The tail is two feet long, brown above, white beneath, and black at the end; *Pennant's Synopſ. of Quad. p.* 31.

Strepſiceros; *Caii Opuſc. p.* 56. *Geſner. Quad. p.* 309. *Icon.* 31.

Antilope ſtrepſiceros: *Pallas Miſcel.* ix. *ſpicil.* 17.

Cerf du Cap. de Bonne-eſperance; *Hiſt. et Com. Acad. Palatin. tom.* i. *p.* 487.

like

like thoſe of the ſtag, it had two large hollow horns, with a ridge like thoſe of the he-goat, and a double flexion, like thoſe of the antilopes. In ſearching the Royal Cabinet, I found two horns which belonged to this animal. The firſt had been brought from the King's wardrobe, without any title or name. The ſecond I had from M. Baurhis, commiſſary of the navy, under the name of the *Condoma* of the Cape of Good Hope; which name we have adopted, becauſe the animal has not hitherto been deſcribed or denominated.

From the length, thickneſs, and eſpecially the double flexion of the horns, the condoma makes a near approach to the *ſtrepſiceros* * of Caius.

* Strepſicerotis cornua tam graphice deſcripſit Plinius, atque lyris tam appoſite comparavit, ut longiore verborum ambitu opus non ſit. Ergo hoc tantum addam: Ea eſſe intus cava, ſed longa pedes Romanos duos palmos tres, ſi recto ductu metiaris: Si flexo, pro natura cornuum, pedes tres integros. Craſſa ſunt, ubi capiti committuntur, digitos Romanos tres cum ſemiſſe. Deſcribuntur in ambitu palmis Romanis duobus et dimidio, eo ipſo in loco. In ſummo, livore quodam nigreſcunt, cum in imo fuſca magis et rugoſa ſint. Jam inde a primo ortu ſenſim gracileſcunt, et tandem in acutum exeunt. Pendent, una cum facie ſicca per longitudinem dimidiata, libras ſeptem uncias tres et ſemiſſem. Facies, quæ adhuc ſupereſt juncta cornibus, et frontis cerviciſque pilus, loquuntur *Strepſicerotem* animal eſſe magnitudine fere cervina, et pilo rufo adinſtar cervini. Sed an nare et figura corporis cervina ſit, ex facie nihil habeo certi dicere, cum nares diuturni temporis uſu detritæ ſint, et facies eadem de cauſa hinc inde glabra ſit; conjiceres tamen ex eo quod ſupereſt eum propius accedere ad cervum aut platycerotem; *Caius, apud Geſnerum, de Quad. p.* 295.

The

The figure, and even all the dimenſions of the horns, are almoſt perfectly the ſame. From this correſpondence in the ſize and figure of the head and horns, we may preſume that the condoma and *ſtrepſiceros* of Caius are the ſame animal, eſpecially when the following reflections are attended to: 1. Caius, it is obvious, was deceived, when he made this animal the *ſtrepſiceros* of the ancients; for the *ſtrepſiceros* of the ancients is unqueſtionably the *antilope*, whoſe head is very different from that of the ſtag. Now Caius tells us, that the head of the ſtrepſiceros reſembled that of the ſtag; and, therefore, it could not be the ſtrepſiceros of the ancients. 2. Caius's animal, like the condoma, had thick horns, above three feet long, covered with rugoſities, inſtead of rings or tubercles; but the horns of the ſtrepſiceros of the ancients, or *antilope*, are much thinner and ſhorter, having both rings and tubercles. 3. Though the horns of the condoma in the cabinet of the Marquis de Marigny, as well as thoſe which were brought from the King's wardrobe, had been poliſhed by friction, it is eaſy to perceive that they never had rings. This fact is farther demonſtrated by the horn ſent to me by M. Baurhis, which had never been touched, and yet it had only rugoſities like the he-goat, and no rings like the *antilope*. Now, Caius himſelf tells us, that the horns of his ſtrepſiceros had rugoſities only. Hence this ſtrepſiceros is

not

not that of the ancients, but the animal we are here treating of, which poſſeſſes all the characters which Caius attributes to his.

In examining the writings of travellers, we have found nothing that approaches ſo near to the genuine idea of this animal, which is ſo remarkable for its ſize, and particularly the largeneſs of its horns, as the quadruped mentioned by Kolbe under the denomination of the *wild-goat* of the Cape of Good Hope. 'This 'goat,' ſays he, 'which has received no name 'from the Hottentots, and which I have called 'the *wild-goat*, is remarkable in many reſpects. 'It is of the ſize of a large ſtag; its head is 'very beautiful, and adorned with two ſmooth 'horns, which are bended and pointed. They 'are three feet in length, and their extremities 'are two feet aſunder.' Theſe characters ſeem to correſpond exactly with the animal under conſideration: But, having ſeen the head only, we cannot be equally certain that the reſt of Kolbe's deſcription * will apply to it with equal preciſion. Future obſervations alone can determine the truth of what now appears to be extremely probable.

* From the front and along the whole back, as far as the tail, there is a white ſtripe; another, of the ſame colour ſurrounds the lower part of the neck; other two of the ſame kind ſurround the body, the one behind the fore-legs, and the other before the hind-legs. The hair on the reſt of the body is gray, with ſome reddiſh ſpots, except that on the belly, which is white. The beard is gray and very long. The limbs, though long, are well proportioned; *Deſcript. du Cap de Bonne-eſperance, par Kolbe, tom.* iii. *p.* 42.

The GUIB, or HARNESSED ANTILOPE*.

THIS animal, though not taken notice of by any naturaliſt or traveller, is very common in Senegal, from which M. Adanſon brought a ſkin of it, and preſented it to the royal cabinet. It reſembles the gazelles, and particularly the nanguer, in the ſize and figure of the body, in the lightneſs of the limbs, in the form of the head and muzzle, in the eyes and ears, and in the length of the tail, and the want of a beard. But all the gazelles, and eſpecially the nanguers, have their bellies of a fine white colour; while the breaſt and belly of the guib are of a deep cheſnut. It differs likewiſe from the gazelles by its horns, which are ſmooth, without tranſverſe rings, and have two longitudinal ribs, the one above and the other below, forming a ſpiral twiſt from the baſe to the point: They are alſo

* The harneſſed antilope has ſtrait horns, nine inches long, pointing backward, with two ſpiral ribs. The ears are broad. The colour is a deep tawny. Beneath each eye there is a white ſpot. The ſides are moſt ſingularly marked with two tranverſe bands of white, croſſed by two others from the back to the belly; the rump with three white lines pointing downward on each ſide. The thighs are ſpotted with white. The tail is ten inches long, covered with long rough hairs; *Pennant's Synopſ. of Quad. p.* 27.

Antilope ſcripta; *Pallas Miſcel.* viii. *ſpicil.* 15.

ſomewhat

Plate CCI.

A. Bell Sculp.t

GUIB.

ſomewhat compreſſed. Theſe characters make the guib approach the goat more than the gazelle. It is, however, neither the one nor the other, but an intermediate ſpecies. This animal is remarkable for white bands upon a cheſnut ground colour. Theſe bands are diſpoſed along and croſs the body, like a harneſs. He lives in ſociety, and great flocks of them are found in the plains and woods of the country of Podor. As M. Adanſon is the firſt who remarked the guib, we ſhall ſubjoin his deſcription, which he obligingly communicated to us *.

* Guib, *among the Negroes, Oualoſes or Jaloſes*. Gazella cornibus rectis ſpiralibus; caput, roſtrum, naſus, oculi, uti *Nanguer*. Cornua recta ſpiralia, ſpira prima nigra, nitida, ſubcompreſſa, angulis duobus lateralibus, antice convexa, pone plana, apice conico teretia. . . . Aures uti *Nanguer* intus ſubnudæ quinque pollices longæ. . . . . Cauda decem pollices longa, pilis longis hirta. Dentes duo et triginta. Pedes uti *Nanguer*. Corpus totum fere fulvum. Albæ faſciæ ſex utrinque in dorſo tranſverſæ, et faſciæ albæ duæ longitudinales ventri laterales. Maculæ albæ utrinque octo ad decem ſupra femora, orbiculatæ. Collum ſubtus album et genæ albæ; latera pedum interiora alba, macula alba paulo infra oculos. Frons media nigra, linea ſupra dorſum longitudinalis nigra, venter ſubtus niger, pars antica pedum anteriorum, ungulæ, et cornua nigra; longitudo ab apice roſtri ad anum quatuor pedes cum dimidio; altitudo a pedibus poſticis ad dorſum duos pedes octo pollices; pili omnes breviſſimi, lucidi, vix unum pollicem longi, corpori adpreſſi. Pulchrum animal a *D. Andriot* miſſum. *M.S. communicated by M. Adanſon to the Royal Academy of Sciences.*

The GRIMM, or GUINEY ANTILOPE*.

THIS animal is known to the naturaliſts by the appellation of the *Grimm-goat* only, which, as we are ignorant of the name given it in its native country, we ſhall adopt. There is a figure of it in the German † Ephemerides, which has been copied in the Academy Collection ‡. Dr. Herman Grimm was the firſt who mentioned this animal; and what he ſays concerning it was copied by Mr. Ray, and after-

* The Guiney antilope has ſtrait black horns, ſlender and ſharp pointed, not three inches long, and ſlightly annulated at the baſe. The height of this moſt elegant animal is about eighteen inches. The ears are large and the eyes duſky: Below the eyes is a large cavity, into which exudes a ſtrong ſcented oily liquid. Between the horns is a tuft of black hairs. The colour of the neck and body is brown, mixed with cinereous, and a tinge of yellow. The belly is white. The tail is ſhort, white beneath, and black above; *Pennant's Synopſ. of Quad. p.* 28.

Capra ſylveſtris Africana Grimmii; *Raii. Synopſ. Quad. p.* 80. *Klein Quad. p.* 19.

Tragulus in medio capite faſciculum piloſum erectum gerens... Tragulus Africanus. Le Chevrotain d'Afrique; *Briſſon Regn. Anim. p.* 97.

Moſchus Grimmia, capite faſciculo tophoſo; *Linn. Syſt. Nat. p.* 92.

Antilope Grimmia; *Pallas Miſcel.* x. *tab.* 1. *ſpicil.* 38. *tab.* 3.

† Ephem. Nat. Cur. an. xiv. obſ. 57.

‡ Collect. Academ. tom. iii. pl. 26.

wards

wards by all the nomenclators. Though his deſcription be incomplete *, he points out two characters ſo remarkable, that we eaſily recogniſed a head of a Sénegal animal, ſent us by M. Adanſon, to belong to the grimm. The firſt is an enormous cavity below each eye, which penetrates ſo deep as to leave only a thin plate of bone between each cavity and the partition of the noſe: The ſecond is a buſhy tuft of hair, reflected backward on the top of the head. Theſe characters ſufficiently diſtinguiſh the grimm from all the other goats or gazelles. It has, however, a reſemblance to both, not only in the form of the body, but even in the horns, which are annulated towards the baſe, furrowed longitudinally, like thoſe of the gazelles, and, at the ſame time, directed horizontally backward, and very ſhort, like thoſe of the ſmall African goat, formerly mentioned. Beſides, this animal being

* In a caſtle, near the Cape of Good Hope, ſays Dr. Herman Nicolas Grimm, I ſaw a very ſingular ſpecies of wild goat. It was of an obſcure aſh-colour. On the top of its head there was a tuft of erect hairs; and, between each eye and noſtrils, a cavity filled with a yellowiſh humour, which was oily and viſcid, and, when expoſed to the air, became black and hard: This ſubſtance, the odour of which participates both of caſtor and muſk, renews ſucceſſively after the cavities are emptied. I was aſſured that the cavities had no communication with the eyes, and that the thick humour they contained was different from that collected in the large angle of the eyes of ſtags and ſeveral other animals; *Ephem. des Curieux de la Nature, decad.* ii. *ann.* 4. 1686. *obſ.* 57. *Collection Academique, Dijon, tom.* iii. *p.* 696. *tab.* 26.

much ſmaller than the goats, gazelles, &c. and having very ſhort horns, ſeems to conſtitute the ſhade between the goats and the *chevrotains*, or ſmall antilopes.

In the ſpecies of the grimm, the males alone appear to have horns; for the individual deſcribed and engraved by Dr. Grimm had no horns; and the head given us by M. Adanſon had two ſhort horns, nearly concealed among the hair, though ſtill apparent enough to be ſeen by the drawer: Beſides, in the hiſtory of the *chevrotains*, or ſmall antilopes, we will find, that, in the royal or Guiney antilope, the male alone has horns; which makes it probable that the caſe is the ſame with the grimm ſpecies, which is more allied to the ſmall antilopes than to any other animal.

SUPPLEMENT.

MESS. Voſmaër and Pallas have given deſcriptions of this beautiful animal, and a good figure of it, which we have here copied. It is worthy of remark, that the horns of the grimm, preſerved in the Royal Cabinet, bend a little forward at their points; while thoſe deſcribed by Voſmaër and Pallas bend a little backward. The ears of the former are round at the extremities; but

but thoſe of the latter terminate in a point. Is this a natural variety, or an error in the drawing? Voſmaër and Pallas's grimm has the point of the noſe black, a black band extending from the noſe along the chanfrin, and ending at the tuft of hair placed on the top of the front. The head in the Royal Cabinet has not this band: Theſe ſlight differences, however, are not ſufficient to conſtitute diſtinct ſpecies.

M. Voſmaër calls this animal the *ſmall beautiful buck* of Guiney, probably on account of its elegance. But I ſhall retain the name of *grimm*; becauſe, under that appellation, it is known to all the naturaliſts.

'This animal,' M. Voſmaër remarks, 'was a 'male, and one of the moſt beautiful and delicate 'creatures I ever ſaw. It was ſent from Guiney 'to Holland along with thirteen others of the 'ſame ſpecies, and of both ſexes. Twelve of 'them died during the voyage, and in this num-'ber were all the females; ſo that there remained 'alive two males only, which were put into 'the menagery of the Prince of Orange, where 'one of them died in the winter 1764. Ac-'cording to our information, the females have 'no horns. Theſe animals are extremely timid. 'Any noiſe, and particularly thunder, terrifies 'them. When ſurpriſed, they expreſs their 'fear by blowing ſuddenly and with great force 'through their noſe.'

'The one which is ſtill alive (in 1766) was 'at firſt wild; but has now become pretty tame. 'It liſtens when called by its name *Tetje*, and, 'when gently approached, with a piece of bread 'in the hand, it allows its head and neck to be 'ſtroaked. It is ſo cleanly, that it ſuffers not 'the ſmalleſt particle of dirt to remain on any 'part of its body; for this purpoſe, it often 'ſcratches itſelf with one of its hind feet. This 'is the reaſon why it has received the appella-'tion of *Tetje*, from *Tettig*, which ſignifies *neat* 'or *clean*. However, if a perſon continues for 'ſome time to rub its body, a white powder ad-'heres to his fingers like that which proceeds 'from horſes when they are curried.

'This animal is extremely agile; and, when 'repoſing, it frequently keeps one of its fore-feet 'in an elevated and bended poſition, which gives 'it a very agreeable appearance. It is fed with 'bread, rye, and carrots: It likewiſe ſpontane-'ouſly eats potatoes. It is a ruminating animal, 'and diſcharges its excrements in ſmall balls, 'the ſize of which is conſiderable, in proportion 'to the magnitude of the creature.'

Dr. Herman Grimm tells us, that the fat, viſcid, yellow humour, which is ſecreted in the cavities above the eyes of this animal, has an odour that participates of muſk and caſtoreum. M. Voſmaër remarks, that, in his live ſubject, this viſcid matter had no odour of any kind; and that the figure given by Grimm is extremely erroneous;

erroneous; for it repreſents a tuft of hair on the fore-head, which has no exiſtence; and his ſubject, which was a female, had no horns: 'But ours,' continues M. Voſmaër, 'is a male, 'and has large horns in proportion to its ſize: 'And, inſtead of this high, erect tuft of hair, 'it had only a ſmall quantity, which roſe a 'little to a point between the horns. It is 'about the ſize of a kid of two months old;" (though it was probably three or four years of age; becauſe it was ſent from Guiney before the winter 1764, and M. Voſmaër publiſhed his deſcription of it in the year 1767.) 'Its limbs 'are fine, and well proportioned to its body. Its 'head is beautiful, and pretty much reſembles 'that of a roebuck. The eye is lively and full 'of fire. The noſe is black and naked, but al-'ways moiſt. The noſtrils are ſhaped like a 'long creſcent. The edges of the muzzle are 'black. The upper lip, though not divided, 'has the appearance of being ſeparated into two 'lobes. There is no hair on the chin; but, a 'little higher, there are, on each ſide, a kind of 'ſmall whiſkers; and, under the throat, a ſort 'of wart garniſhed with hair' (which brings this animal ſtill nearer to the goat-kind, moſt of whom have ſimilar warts or excreſcences on their throats).

'The tongue is rather round than oblong or 'pointed. . . . . The horns are black, finely fur-'rowed from top to bottom, and about three

'inches in length: They are perfectly ſtraight, 'and terminate in a very ſharp point. At the 'baſe, they are nearly three quarters of an inch 'thick; and they are ornamented with three 'rings, which riſe a little backward.

'The hairs on the front are ſtraighter than 'the others; and, at the origin of the horns, 'they are coarſe, gray, and criſped. Between 'the horns, the hair is more erect, and forms a 'kind of pointed black tuft, from which a ſtripe 'of the ſame colour deſcends and loſes itſelf in 'the noſe.

'The ears are large, and have, on the outſide, 'three cavities or depreſſions, directed from the 'top to bottom. Internally, and at the ſum- 'mit, the ears are garniſhed with white, ſhort 'hair: The reſt of the ears are naked and black. 'The eyes are pretty large, and of a deep brown 'colour. The hair on the eye-lids is black, 'cloſe, and long, eſpecially on the upper eye-lid, 'Above the eyes there are ſome long hairs; but 'they are thinly diſperſed.

'On both ſides, between the eyes and noſe, 'we ſee thoſe remarkable cavities by which this 'animal is eaſily diſtinguiſhed. Theſe parts are 'naked and black. In the middle, a cavity or 'depreſſion appears, which is ſomewhat callous, 'and always moiſt. A ſmall quantity of a viſ- 'cid gummy humour, diſtils from it, which 'ſoon hardens, and becomes black. The ani- 'mal ſeems occaſionally to throw off this ex-

'cremen-

Plate CCII.

A. Bell Sculp.t

GRIMM.

'crementitious matter; for we find it hard and 'black on the ſtakes of his lodge, as if it had 'been wiped off. With regard to the odour, 'mentioned by Dr. Grimm and his followers, I 'could never diſcover it.

'The under part of the neck, which is mo-'derately long, is covered with pretty coarſe hair, 'of a yellowiſh gray colour, like that of the 'head. But the throat and upper part of the 'neck is white.

'The hair on the body is black and ſtiff, 'though it be ſoft to the touch. That on the 'anterior parts is of a fine bright gray colour; 'farther back it is a bright brown; toward the 'belly it is gray; and, lower down, it is per-'fectly white.

'The legs are extremely ſlender, and blackiſh 'near the hoofs. The anterior parts of the 'fore-feet, as far as the knees, are adorned with 'a black band. They have no heels; but, in 'their place, there is a ſlight excreſcence. The 'feet are cloven, and provided with beautiful, 'black, pointed, ſmooth hoofs.

'The tail is very ſhort, white, and marked 'above with a black band. With regard to the 'organs of generation, they are firmly incloſed 'in a black ſcrotum, hang down between the 'legs, and are provided with a large prepuce.

The CHEVROTAINS, or SMALL ANTILOPES*.

THE name *Chevrotain (Tragulus)* has been applied to thoſe ſmall animals of the warm regions of Africa and Aſia which are mentioned by almoſt every traveller under the denomination of the *ſmall ſtag*, or the *ſmall hind*. They, indeed, reſemble the ſtag in the figure of the muzzle, in lightneſs of body, in the form of the limbs, and in the ſhortneſs of the tail. But they differ from him prodigiouſly in ſize, the largeſt not exceeding the magnitude of a hare. Beſides, ſome of them want horns entirely; and, in thoſe which have horns, they are hollow, annulated, and pretty ſimilar to thoſe of the gazelles. Their ſmall cloven foot has alſo a greater reſemblance to the foot of the gazelle than to that of the ſtag; and their want of pits, or depreſſions under the eyes, removes them equally from the gazelles and the ſtags. In this article they approach the goats: But, in fact, they are neither ſtags, gazelles, nor goats, but conſtitute one or ſeveral diſtinct ſpecies. Seba gives a de-

* In modern Latin, *Tragulus*; in Senegal, *Guevei*. According to M. Adanſon, the ſmalleſt kind is called *Guevei-kaior*, becauſe it inhabits the province of *Kaior*, which includes Cape Verde and the country adjacent.

ſcription

ſcription and figures of five chevrotains *. The firſt he calls *the ſmall African hind from Guiney, which*

* Tabula quadrageſima et tertia, No. 1. Cerva parvula, Africana, ex Guinea, rubida, ſine cornibus. Licet admodum puſilla hæc ſit, tamen ſua in ſpecie maxima eſt; quum congeneres ejus plerumque aliquantum minores deprehendantur. Caput, magni cervi æmulum, cornibus tamen caret. Curſu ſaltuque velociſſimæ ſunt, longis, gracilibuſque pedibus, in binas ungulas, uti in magnis cervis, concinne fiſſis, innixæ: Neque vero calcaneum in parvam ungulam elongatur, uti in proceris, ſed talus craſſus et rotundus eſt. Pilus dorſi ex fuſco rubet; ad ventrem et ſub collo albicat. Cauda minus longa, et longis diſperſiſque pilis veſtita, ex fuſco, rubro, et albo variegatis. Suffraginis poſtica facies in hac dilutiſſime ſpadicea eſt. Fœmellam hic repræſentamus. Pabulum horumce animalculorum cymæ ſunt graminum, aliarumque herbarum. Altiſſimos autem montes conſcendunt, difficillime, nec niſi ope tendicularum, captandæ. Summas inter delicias ciborum, et pro ferina optima habentur; quo etiam nomine digniſſimorum munerum adminiſtratoribus, illis in locis, dono dantur.

No. 2. Hinnulus, ſeu cervus juvencus, pergracilis, Africanus. Salientis hic in geſtu conſtitutus, tenui gracilique eſt corpore, atque articulis, inſtar canis venatici, priori congener, et concolor. Auriculæ mediocriter prolixæ ſunt. Cauda, ſurſum recurvata, quaſi criſpata eſt. Maxilla inferior inſignes dentes a primo ortu gerit. Pedes, tanquam res pretioſa, aurum circumcluſi, loco piſtillorum, ad nicotianam in fiſtulas adigendam, uſurpantur. Sub lit. A. ejuſmodi repræſentatur.

No. 3. Cervus juvencus, perpuſillus, Guineenſis. Minima hæc ſpecies eſt inter omnes quas hactenus hiſce in oris videre licuit: Quanquam in noſtro muſæo pedes minoris adhuc aſſervemus, prout lit. B. demonſtrat. Dantur et aliæ ſpecies, quæ bina, nigricantia, et acuminata cornicula gerunt; cujuſmodi ſub lit. C. exhibimus. Quotannis novo annulo notantur cornicula, quorum e numero ætas animalculi ſupputatur: Id, quod in bobus quoque obtinere, notiſſimum eſt. Summus Ruſſorum Imperator, quando muſæi mei perluſtrandi gratia

which is reddiſh, and without horns; the ſecond, *the fawn or young ſtag of Africa, which is very delicate;* the third, *the young, very ſmall ſtag of Guiney*; the fourth, *the ſmall hind of Surinam, which is reddiſh, aud marked with white ſpots;* the fifth, *the African ſtag, with reddiſh hair.* Of theſe five *chevrotains*, the firſt, ſecond, and third, are evidently the ſame animal. The fifth, which is larger than the three firſt, and whoſe hair is much longer, and of a deeper yellow colour, ſeems to be only a variety of the

ad me inviſere dignabatur, centum mihi aureos offerebat, ſi tam puſillum ipſi cervum procurare poſſem: Sed votis excidi, quidquid impenderim operæ.

Tabula quadrageſima et quarta. No. 2. Cervula Surinamenſis, ſubrubra, albis maculis notata. Caput, pectus, abdomen, et pedes exceperis, quæ unicoloria ſunt; reliquum, ex rufo luteum, maculis albis undique tygridis in modum, variegatur; auriculæ grandes, longæ; cauda brevis, obtuſa. Curſus rapiditate incredibili vel magnum cervum ſuperat. Memorabile eſt, cervos Americanos adeo puſillos eſſe: Quum dentur, leporem qui magnitudine haud excedunt; et omnium maxima ſpecies altero tanto circiter major ſit, quam quæ hac tabula repræſentatur. Cornua vero numquam gerunt, et pro ſapidiſſima ferina habentur.

Tabula quadrageſima et quinta. No. 1. Cervus Africanus, pilo rubro. Parvus quidem eſt; at iſta tamen in ſpecie cervorum maximus, quem hic repræſentamus, ex oris Guineæ oriundus. Egimus de his animalculis jam prægreſſis in tabellis. Interim ut, quantum licet, ſpecierum exhiberetur varietas, hunc quoque æri curavimus incidi; ſiquidem et ſpecie et pilo diſcrepet ab aliis. Pilus ei longior eſt, coloris ex fuſco longe obſcurioris, quam in præcedentibus. Pedes etiam et crura ejus longiora ſunt, et concinne admodum ſubrefecta. Cæterum cum prioribus convenit; *Seba, vol.* i. *p.* 70. *et* 73.

firſt

firſt kind. The fourth, which Seba mentions as a native of Surinam, appears to be a ſecond variety of this ſpecies, which is found in Africa, but not in the ſouthern regions of Aſia; and I am inclined to think, that Seba has been ill informed, when he tells us, that this animal came from Surinam. All voyagers mention theſe ſmall ſtags or chevrotains as being found in Senegal, Guiney, and the Eaſt-Indies; but no traveller affirms that he has ſeen them in America. If Seba's ſpotted chevrotain really came from Surinam, we muſt preſume that it had been tranſported from Guiney, or ſome other ſouthern region of the Old World. But there ſeems to be a ſecond ſpecies of chevrotain, different from all thoſe we have mentioned, which are only ſimple varieties of the firſt. This ſecond ſpecies has horns, which are only an inch in length, and as much in circumference. Theſe ſmall horns are hollow, black, a little bended, very ſharp at the points, and ſurrounded at the baſe with three or four tranſverſe rings. In the King's cabinet, we have the feet of this animal, and one of its horns; and theſe parts demonſtrate, that it is either a chevrotain, or a very minute gazelle. Kolbe, when mentioning this ſpecies, ſays, that its horns were ſimilar to thoſe of the ſtag, and that they have branches in proportion to their age *. This is an evident blunder,

* In Congo, Viga, Guiney, and other places near the Cape of

blunder, as appears from a bare inſpection of the horns themſelves.

The figure of theſe animals is elegant, and their members are finely proportioned to their ſize. They make prodigious bounds; but it is probable that they cannot run long; for the Indians overtake them in the chaſe *. The Indians hunt theſe animals, and kill them with ſticks or ſmall darts. They are in great requeſt, on account of the delicacy of their fleſh.

By comparing the relations of voyagers, it appears, 1. That the chevrotain, whoſe figure we have given, and who wants the horns, is peculiar

of Good Hope, we find a ſpecies of goat which I call the *Congo goat*. It is not larger than a hare; but its beauty and ſymmetry are truly admirable. Its horns reſemble thoſe of the ſtag, and have alſo branches in proportion to their age. Its legs are very handſome, and ſo ſmall, that the inferior part of them is often uſed as a tobacco ſtopper. They are mounted with gold or ſilver; *Deſcript. du Cap de Bonne-eſperance, par Kolbe, tom.* iii. *p.* 39.

* The inhabitants of a ſmall iſland near Java bring hinds of the ſize of a hare, which the Indians take in the chaſe; *Voyage de la Gentil, tom.* iii. *p.* 73. *et p.* 93. There is ſtill another kind of little quadrupeds. They are extremely handſome; their horns are black, and their legs, though proportioned to the ſize of their bodies, are ſo ſlender, that ſome of them exceed not, in thickneſs, the ſtalk of a tobacco-pipe. I ſend you one ornamented with gold, &c.——Theſe ſmall animals are extremely fleet, and make ſurpriſing bounds. I have ſeen ſome of thoſe which we ſeized ſpring over a wall of ten or twelve feet high. The Negroes call this animal the *King of the Harts*; *Voyage de Guinée, par Boſman, p.* 252.

to

to the Eaſt-Indies*; 2. That the one with horns is the chevrotain of Senegal, called *Guevei* by the natives †; 3. That the male *guevei* has horns ‡, and that the female has none; 4. That

* The Guiney Muſk is nine inches and a half long. The head, legs, and whole upper part of the body are tawny, and the belly is white. It has no ſpurious hoofs. There are two very broad cutting teeth in the lower jaw, and on each ſide of them, three others very ſlender. In the upper jaw there are two ſmall tuſks. The ears are large, and the tail an inch long. In the poſſeſſion of Mr. Guy of York-Buildings, who ſaid it came from Guiney. M. de Buffon ſays it is found in the Eaſt-Indies; *Pennant's Synopſ. of Quad. p.* 59.

Tragulus Guineenſis; *Briſſon. Quad. p.* 66.

Tragulus Indicus; *Klein, Quad. p.* 21.

Moſchus pygmæus, pedibus humano digito anguſtioribus; *Linn. Syſt. Nat. p.* 92.

† The Royal Antilope has very ſhort, ſtrait horns, black and ſhining as jet, and ſcarce two inches long. The ears are broad; and the height not above nine inches. The legs are not thicker than a gooſe quill. The colour is a reddiſh brown. The females want horns; *Pennant's Synopſ. of Quad. p.* 28.

King of the Harts; *Boſman's Voyage, p.* 236.

Petite biche; *Deſmarchais, tom.* i. *p.* 312.

Cervula parva Africana; *Seba Muſ. tom.* i. *p.* 70. *tab.* 43. *Adanſon's Voyage, p.* 207.

‡ In the kingdom of Acara, on the Gold Coaſt, we find hinds ſo ſmall that they exceed not eight or nine inches in height. Their legs are not thicker than a gooſe quill. The males have horns, which bend back on the neck, and are two or three inches long. They have no branches or antlers, but are twiſted, and as black and ſhining as jet. Theſe ſmall animals are very tame, fawning, and careſſing; but they are ſo extremely delicate, that no attempts to tranſport them into Europe have ever ſucceeded; *Voyage de Deſmarchais, tom.* i. *p.* 31. See alſo *L'Hiſt. Gen. des Voyages, par M. l'Abbé Prevoſt, tom.* iv. *p.* 75.

the

the chevrotain, ſpotted with white, and which Seba ſays is brought from Surinam, is, on the contrary, a native of the Eaſt-Indies, and particularly of Ceylon *, where it is called *Memina*. We muſt, therefore, conclude, that there are only two known ſpecies of chevrotains, the memina, or Indian kind, without horns, and the guevei or chevrotain of Guiney, with horns; that the five ſpecies of Seba are only varieties of the memina; and that the ſmalleſt kind, called *Guevei-kaior* in Senegal, is only a variety of the guevei.

None of theſe ſmall animals can ſubſiſt, except in very warm climates. They are ſo extremely delicate, that it is with the utmoſt difficulty they can be tranſported alive into Europe, where they ſoon periſh. They are gentle, familiar, and moſt beautifully ſhaped. Beyond all compariſon, they are the ſmalleſt cloven-footed animals. From this laſt character, they ſhould produce but few young at a litter. From their

* In the iſland of Ceylon, there is an animal called *Memina*, which is not larger than a hare, but has a perfect reſemblance to the fallow-deer. Its colour is gray, ſpotted with white, and its fleſh is excellent; *Knox's Hiſt. of Ceylon, p.* 21. See alſo *L'Hiſt. Gen. des Voyages, par M. l'Abbé Prevoſt, tom.* viii. *p.* 545.

Indian Muſk: The length is one foot five inches, and the weight five pounds and a half. It is of a cinereous colour, with the throat, breaſt, and belly white. The ſides and haunches are ſpotted, and barred, tranſverſely, with white. The ears are long and open, and the tail very ſhort; *Pennant's Synopſ. of Quad. p.* 59.

minute-

minuteneſs, on the contrary, they ought to bring forth a great number. On this ſubject, we muſt wait for information from thoſe who have an opportunity of obſerving their œconomy. We imagine that they bring forth but one or two at a time, like the gazelles, roe-deer, &c. But perhaps they produce more frequently; for they are very numerous in India, Java, Ceylon, Senegal, Congo, and in all the very warm countries; and none of them are found in America, or in any of the temperate regions of the Old Continent.

SUPPLEMENT.

WE have here added the figure of a chevrotain, which differs from that in the original work; where it was remarked, that the ſkin of the chevrotain is variegated with white ſpots, and that Seba maintained that it was found in Surinam. It exiſts not, however, in America, but in the Eaſt Indies, where it is called *Memina*. Under this denomination, we received the ſkin of a chevrotain from Ceylon, which had a perfect reſemblance to the deſcription we had given of it. By comparing this with our original figure, we ſhall perceive that none of theſe animals have horns, and that they are both varieties of the ſame ſpecies only.

THE MAZAMES.

MAZAME, in the language of Mexico, was the name of the *ſtag*, or rather a generic name including the *ſtag*, the *fallow-deer*, and the *roebuck*. Hernandes Recchi, and Fernandes, who furniſhed us with this appellation, diſtinguiſh two ſpecies of mazames, both of which are very common in Mexico and New Spain. The firſt, and the largeſt, to which they give the ſimple name of *Mazame* *, has horns reſembling thoſe of the European roebuck, that is, about ſix or ſeven inches long, with the extremities divided into two points, and a ſingle antler. The ſecond, which they call *Temamaçame*, is ſmaller, and its horns are ſimple, and have no antlers. Theſe two animals appear to

* De Mazame ſeu Cervis, cap. 14. —— Hos *(Telethtlalmaçame* ſcilicet et *Temamaçame)* ego potius computaverim inter Capreos (quam inter Cervos). —— Mazames caprarum mediocrium paulove majori conſtant magnitudine; pilo teguntur cano et qui facile avellatur, fulvoque; ſed lateribus et ventre candentibus: —— Cornua geſtant juxta exortum lata, ac in paucos parvoſque teretes ac præacutos ramos diviſa, et ſub eis oculos quarum imaginem exhibemus (fig. pag. 324.), deinde in quodam damarum genere quas *Macatlchichiltic* aut *Temamaçame* appellant, breviſſimis cornibus acutiſſimiſque, coloris fulvi, fuſci, et inferne albi, quarum quoque præſtita eſt imago (fig. pag. 325.) *Nard. Ant. Recchus apud Hernandeſium, lib.* ix. *cap.* 14. *pag.* 324. *et* 325.

be

be really roebucks, the firſt being the ſame ſpecies with the European roebuck, and the ſecond only a variety of it. It likewiſe appears, that theſe roebucks, or mazames and temamaçames of Mexico, are the ſame with the *cuguacu-apara* * and the *cuguacu-été* of Braſil; and that, at Cayenne, the firſt is called *Cariacou*, or *wood-hind*, and the ſecond the *ſmall Cariacou*, or *Savannah-hind* †. Though we have firſt exhibited theſe relations, yet we would not have preſumed that every difficulty or doubt was removed, if Seba ‡ had not given, under the denominations of

* The figure of Piſo's *cuguacu-été*, p. 98. has a perfect reſemblance to our roebuck; and we have only to compare it with that of Recchi's mazame, to be ſatisfied that it is the ſame animal. This cuguacu-été of Piſo has palmated horns; yet Marcgraave, though he has given no figure, tells us, that it has no horns, and that it is the *cuguacu-apara*, which has horns with three antlers. As in the roe-deer, the female has no horns, it is probable, that the individual pointed out by Marcgraave was the female. The deſcriptions given of theſe animals by Piſo and Marcgraave demonſtrate that they are roebucks, perfectly ſimilar to thoſe of Europe.

† *Cervus major corniculis breviſſimis*, wood-hind. *Cervus minor paluſtris, corniculis breviſſimis*, the Savannah hind, ſo called becauſe ſhe generally frequents marſhy grounds. In Cayenne, *hind* is the general denomination for both the female and male ſtag, even when the latter has his horns in the greateſt perfection; *Barrère, Eſſai ſur l'Hiſt. Nat. de la France Equinoxiale, p.* 171.

‡ Tabula quadrageſima ſecunda, No. 3. Mazame ſeu cervus cornutus, ex nova Hiſpania. Hæc ſpecies omnino differt ab illa quam Guinea profert. Capite et collo, craſſis curtiſque eſt, et bina gerit tornata quaſi cornicula, in acutum recurvumque apicem convergentia, retrorſum reclinata. Auriculæ grandes, flaccidæ: At oculi

of *mazame* and *temamaçame*, two different animals: They are not roebucks with horns solid and palmated, but gazelles with hollow and twisted horns. They are not natives of New Spain, as this author affirms, but of Africa. These blunders of Seba have been adopted by most subsequent naturalists. They never doubted but that the animals mentioned by Seba, under the names of *mezame* and *temamaçame*, were

oculi venusti. Cauda crassa, obtusa. Pilus totius corporis subrufus est, paulo tamen dilutior qui caput et ventrem tegit. Femora cum pedibus admodum habilia.

No. 4. Cervus *Macatlchichiltic* sive *Temamaçama* dictus. Horum ingens numerus per alta montium et rupium novæ Hispaniæ divagatur, qui gramine, foliis, herbisque victitantes, cursu saltuque velocissimi sunt. Europæos cervos habitu referunt, sed instar hinulorum, valde parvi. Cornua tornata recurvatum in acumen convergunt, quæ singulis annis nova spira aucta, ætatem animalis produnt. Cornuum color coracinus. Oculi auresque magni et agiles. Dentes prægrandes et lati. Cauda pilis longis obsita; brevioribus et dilute spadiceis universum corpus vestitur. Fr. Hernandesius aliam prorsus horum ideam exhibet, putans veram hanc esse speciem capri cervarum, e quibus lap. bezoar acquiritur: Qua tamen de re diversa penitus percepimus. Notissimum est lapidem bezoar fortuita quadam concretione, in ventriculo animalium nasci, haud secus ac in renibus et vesica hominum calculi generantur. Neque una dumtaxat animantium species lapides hosce profert; sed variæ cervorum, caprarum, hædulorum, et aliorum, quorum in ventriculo plerumque isti concrescunt, nucleum seu basin, dante frustulo quodam ligni, straminis culmo aut lapillo; quæ, si non comminuta nec commansa deglutiuntur, in ventriculum delata, dissolvi nequeunt: His tunc ibi detentis circum accrescit calcaria quædam crusta, sensim aucta; donec a tunica ventriculi secedens lapis, ita conflatus, cum excrementis per alvum oxoneretur; *Seba*.

American animals, and the ſame with thoſe taken notice of by Hernandes, Recchi, and Fernandes. The confuſion of the names has given riſe to a confuſion of the animals themſelves; and, of courſe, ſome naturaliſts have pointed them out under the name of *Chevrotains* *, and others under that of *Gazelles* †, or *goats*. Linnæus ſeems to have been aware of this error; for he has not copied it. He has placed the mazame among the liſt of ſtags, and he has thought, as we do, that the Mexican mazame ‡ is the ſame animal with the cuguacu of Brazil.

To demonſtrate what we have advanced, let us ſuppoſe, that there are neither gazelles nor chevrotains in New Spain, or in any other part

* Tragulus, Temamaçame. . . . . Tragulus, Mazame. *Klein. de Quad. p.* 21.

† Hircus cornibus teretibus, erectis, ab imo ad ſummum ſpiraliter intortis. —— Capra Novæ Hiſpaniæ. La Chevre de la Nouvelle-Eſpagne; *Briſſon. Regn. Anim. p.* 72. (Le Mazame de Seba.) —— Hircus cornibus teretibus circa medium inflexis; ab origine ad flexuram ſpiraliter canaliculatis, a flexura ad apicem lævibus. —— Gazella Novæ Hiſpaniæ. La Gazelle de la Nouvelle-Eſpagne; *Briſſon. Regn. Anim. p.* 70. (Le Temamaçame de Seba).

‡ Bezoarticus. Cervus cornibus ramoſis teretibus erectis: Ramis tribus. Mazama; *Hernand. Mex. p.* 324. Cuguacu; &c. *Marcgrav. Braſ. p.* 235. *Piſ. Braſ. p.* 98. *Ray, Quad. p.* 90. Habitat in America auſtrali; *Linn. Syſt. Nat. edit.* 10. *p.* 67. —— Linnæus, in his 12th edit. has ranked this animal among the goats, and defines it in this manner: 'Capra bezoarticus, 'cornibus teretibus arcuatis, talis annulatis, gula barbata;' *Linn. Syſt. Nat. p.* 96.

of America; that there were no goats or gazelles in the New World before it was diſcovered, but that all thoſe which are now there were tranſported thither from the Old Continent; that the true mazame of Mexico is the ſame animal with the Braſilian cuguacu-apara; that the name *cuguacu* is pronounced *couguacou*; and that, by a corruption, this animal was called *cariacou* in Cayenne, from which it was tranſmitted to us alive, under the denomination of *cariacou*. We ſhall now endeavour to inveſtigate the ſpecies of the two animals to which Seba has falſely applied the names *mazame* and *temamaçame*; for, to deſtroy an error, it is not enough to reject it, but its cauſe and effects muſt alſo be exhibited.

The gazelles and chevrotains inhabit only the warmeſt countries of the Old World. They cannot ſubſiſt in temperate, and far leſs in cold climates. Hence they could never frequent the northern regions, nor paſs, by means of theſe regions, from the one Continent to the other. No travellers, accordingly, or hiſtorians of the New World, ever pretend to have ſeen gazelles or chevrotains in that quarter of the globe. The ſtag and roebuck, on the contrary, are natives of cold and temperate climates. They might, therefore, paſs, by means of the northern lands, and, accordingly, they are found in both Continents. In the hiſtory of the ſtag, it was ſhown,

ſhown *, that the Canadian ſtag is the ſame with the European; and that he is only ſmaller, and has ſome trifling variations in the figure of his horns and the colour of his hair. We may add to what was then related, that there are as many varieties among the American as among the European ſtags; and yet they are all of the ſame ſpecies. Of one of theſe varieties, namely, the Corſican ſtag, we have given a figure †. It is ſmaller and browner than the common kind. We have alſo mentioned white ſtags and hinds, and have attributed this colour to their domeſtic ſtate: This kind is likewiſe found in America ‡, as well as our common and ſmall brown ſtags. The Mexicans, who reared theſe white ſtags in their parks, called them *royal ſtags*. It is a native of Germany, commonly called the *ſtag of Ardennes* and *brandhirts* by the Germans. It is fully as large as the French ſtags, from

* See vol. iv. article *Stag*.

† See vol. iv. plate LII.

‡ Inter cervorum genera quæ apud novam hanc Hiſpaniam adhuc mihi videre licuit (præter candidos totos, quos reges Cervorum eſſe Indi ſibi perſuaſere, nuncupantque a colore *Yztac mazame*, et vocatos *Tlamacaz quemacatl)* primi ſunt quos vocant *Aculliame*, Hiſpanicis omnino ſimiles forma, magnitudine ac reliqua natura; minores his apparent *Quauht maçame*, ſed uſque adeo a cæterorum timiditate alieni, ut vulnerati homines ipſos adoriantur ac ſæpenumero interimant: Hos ſequuntur magnitudine *Tlalhuicamaçame*, qui forma et moribus eſſent eis omnino ſimiles, ni timidiores viderentur; Minimi omnium *Temamaçame* ſunt; *Nard. Ant. Recchus, apud Hernand. p.* 324, *et* 325.

which it differs by ſome remarkable characters. Its hair is more buſhy, and lighter under the belly; and, like the he-goat, it has long hairs upon its neck and throat, which induced both the ancients * and moderns † to give it the appellation of *trage-laphus* or *goat-hart*. The roebucks are likewiſe very numerous in America. In Europe, we know only two varieties, the red and the brown ‡. The latter are ſmaller than the former; but, in other reſpects, they perfectly reſemble each other, and both

* Eadem eſt ſpecie (cervi ſcilicet) barbâ tantum et armorum villo diſtans quem *tragelaphon* vocant; non alibi quam juxta Phaſin amnem naſcens; *Plinii Hiſt. Nat. lib.* viii. *c.* 33.—This race of ſtags is now found in the foreſts of Germany and Bohemia, as, in the days of Pliny, they frequented the banks of the Phaſis.

† Agricula, tragelaphum interpretatur, Germanice dictam feram *ein Brandhirſe*. Tragelaphus, inquit, et cervus in ſylvis cubant. . . Tragelaphus ex hirco et cervo nomen invenit, nam hirci quidem inſtar videtur eſſe barbatus, quod ei villi nigri ſint in gutture et in armis longi; cervi vero gerit ſpeciem; eo tamen multo eſt craſſior et robuſtior. Cervinus etiam ipſi color inſidet, ſed nonnihil nigreſcens, unde nomen Germanicum traxit. Verum tamen ſuprema dorſi pars cinerea eſt, ventris ſubnigra, non ut cervis candida, atque illius villi circa genitalia nigerrimi ſunt. Cæteris non differunt uterque in noſtris ſylvis, quamquam plures tragelaphi in his quæ finitimæ ſunt Boëmicis quam in aliis reperiuntur; *Agricola apud Geſnerum Hiſt. Quad. p.* 296, *et* 297.—Alterum cervi genus ignotius quod Græco nomine *Tragelaphus* dicitur. Priore (cervi ſcilicet vulgaris) majus, pinguius, tum pilo denſius et colore nigrius; unde Germanis, a ſemiuſti ligni colore, *Brandhirtz* nominatur; hoc in Miſenæ ſaltibus Boëmiæ vicinis capitur; *Fabricius apud Geſnerum, p.* 297. *cum Icone, p.* 296.

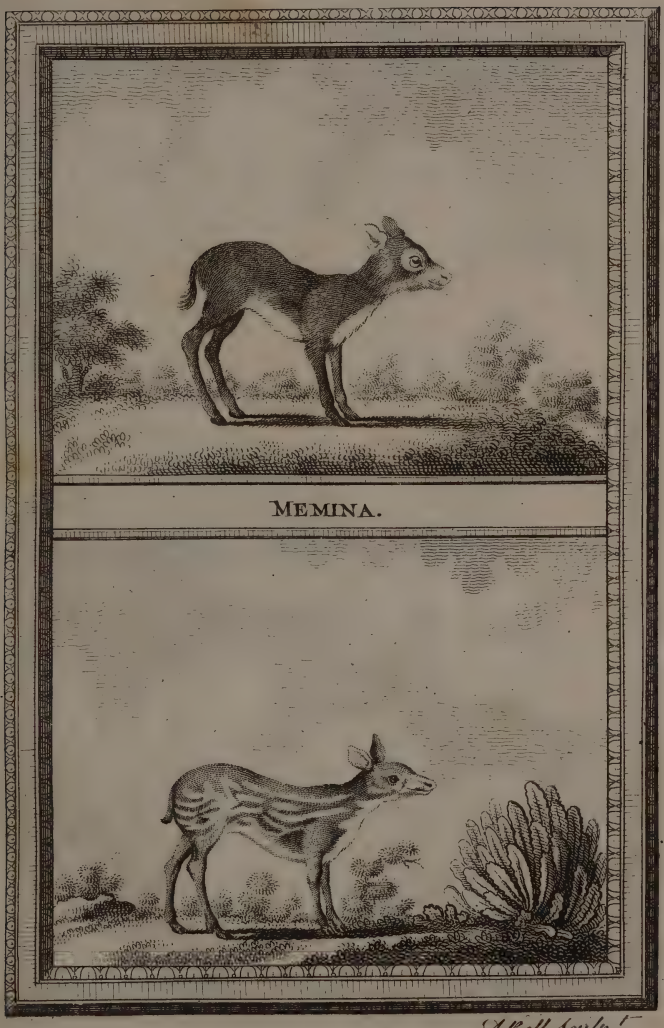
‡ See vol. iii. art. *Roebuck*.

have palmated horns. The mazame of Mexico, the cuguacu-apara of Braſil, and the cariacou, or wood-hind, of Cayenne, have an entire reſemblance to our red roebucks. To be convinced that all theſe names denote the ſame animal, we have only to compare the deſcriptions given under them. But the temamaçame, which, in our opinion, is the cuguacu-été of Braſil, the ſmall cariacou or Savannah hind of Cayenne, may be only a variety different from thoſe of Europe. The temamaçame is ſmaller, and has alſo a whiter belly than the mazame, in the ſame manner as our brown roebuck is ſmaller, and has a whiter belly than the red kind. It appears likewiſe to differ from the mazame in its horns, which are ſimple, and without antlers, in the figure given by Recchi. But, if it be conſidered, that, in our roebucks and ſtags, the horns have no antlers during the firſt and ſometimes the ſecond year of their age, we will be led to believe that Recchi's temamaçame was too young to have antlers. Hence theſe two animals ſeem to be only varieties of the roebuck ſpecies, which will be ſtill farther apparent from comparing the figures and deſcriptions of the different authors we have quoted, with the figure here given of a cariacou which was ſent us from Cayenne, and which we nouriſhed in Burgundy for ſeveral years.

It now remains to inveſtigate the two animals exhibited by Seba under the falſe appellations

of *mazame* and *temamaçame*. The bare inſpection of the figures, independent of his deſcription, which we have inſerted above in the notes, ſhow that theſe animals belong to the goats or gazelles, and by no means to the ſtags or roebucks. The want of a beard, and the figure of the horns, prove that they are not goats, but gazelles; and, by comparing Seba's figures with the gazelles I have deſcribed, I diſcovered, that his pretended *temamaçame of New Spain* is the *Kob*, or *ſmall brown cow of Senegal*. The figure, colour, and ſize of the horns are the ſame. The colour of the hair, which differs from other gazelles, by being yellow, inſtead of white, on the belly and flanks, is alſo the ſame. With regard to his pretended *mazame*, though it has a general reſemblance to the gazelles, it differs remarkably from all thoſe we have formerly enumerated. But we have found, in the cabinet of M. Adanſon, which contains the rareſt productions of Senegal, a ſtuffed animal, which we called *Nagor*, on account of the reſemblance of its horns to thoſe of the nanguer *. This animal is found in

* Capra a D. Andriot miſſa. Differt a nanguer. Longitudo ab apice roſtri ad anum quatuor fere pedum; ab ano ad pectus duo pedes cum dimidio. Altitudo a pedibus anticis ad dorſum duo pedes et tres pollices; a pedibus poſticis duo pedes cum dimidio. Ventris longitudo inter pedes, pedem unum et tres pollices; ventris craſſities decem pollices. Caput longum novem pollices; altum ſex, latum quatuor cum dimidio. Cornua longa quinque pollices cum dimidio; lata unum pollicem



MEMINA of CYLON.

Plate CCIV.

A. Bell Sculp.t

CARIACOU.

Plate CCV.

A Bell Sculp^t

NAGOR.

in the lands adjacent to the iſland of Goree, from which it was tranſmitted to M. Adanſon, by M. Andriot, and poſſeſſes all the characters which Seba has attributed to his pretended *mazame*. The whole body is of a pale red colour; and the belly is not white, as in the other gazelles. It is as large as a roebuck. Its horns, which exceed not ſix inches in length, are almoſt ſmooth, ſlightly bended, in a forward direction, but not ſo much as thoſe of the nanguer. Hence this animal, exhibited by Seba under the name of *mazame*, or *American ſtag*, is, on the contrary, an *African goat* or *gazelle*, which we add here, under the appellation of *nagor* *, to the twelve gazelles whoſe hiſtory we have formerly given.

licem cum dimidio. Apices cornuum diſtant ſex pollicibus; aures longæ quinque pollicum; cornua baſi 1 ad 2 annulis levibus cincta; color totus rufus. Pili mediocres, rigidi, lucidi, unum pollicem longi, corpori non adpreſſi. MS. Note accompanying the ſtuffed animal which we borrowed from M. Adanſon, in order to make a drawing of it.

* The red antilope, with horns five inches and a half long, and one or two ſlight rings at the baſe, The length of this animal is four feet, and the height two feet three inches. The ears are five inches long. The hairs are ſtiff and bright. All parts of the body are of a reddiſh colour; *Pennant's Synopſ. of Quad. p.* 30.

The COUDOUS, or INDIAN ANTILOPE*.

THE claſs of ruminating quadrupeds is the moſt numerous, and the moſt diverſified. It comprehends, as we have ſeen, a great number of ſpecies, and, perhaps, a ſtill greater number of diſtinct races, or permanent varieties. Notwithſtanding all our reſearches, and the laborious details into which we have been obliged to enter, we freely acknowledge that the ſubject is by no means exhauſted, and that there ſtill remain animals of conſiderable note which we know only by imperfect fragments, and are unable to aſcertain the creatures to which they belong. For example, in the very large collection of horns preſerved in the royal cabinet, as well

* The Indian antilope, with thick ſtraight horns, marked with two prominent ſpiral ribs near two-thirds of their length, and ſmooth towards their end: Some are above two feet long. Thoſe at the Britiſh Muſeum, with part of the ſkin adhering, are black. The colour of the hair, on the fragment of the head, is of a reddiſh brown, bounded on the cheeks by a duſky line beneath, of a pale brown; *Pennant's Synopſ. of Quad. p.* 26.

Antilope oryx; *Pallas, Miſcel.* ix. *Spicil.* 15.

Nilgaux, or gray oxen; *Bernier, vol.* iv. *p.* 47.

Pacaſſe; *Voyage to Congo*; *Churchill's Collect. vol.* i. *p.* 623.

as

as in private muſeums, each of which, after much labour and inveſtigation, we have referred to the animal to whom it belongs, except one, which, having neither ticket nor any other artificial mark of information, is abſolutely unknown. This horn is very large, almoſt ſtraight, and compoſed of a thick black ſubſtance. It is not ſolid, like that of the ſtag; but it is a hollow horn, filled with a bone or core, like the horns of oxen. A thick rib, raiſed about an inch, runs from the baſe to above the middle of the horn. Though the horn be ſtraight, this prominent rib makes a ſpiral turn and a half in the inferior part, and is entirely effaced in the ſuperior part, which terminates in a point. Upon the whole, this horn ſeems to have a greater relation to thoſe of the buffalo than to any other. But we are ignorant of the name of the animal; and, it was not till lately, that, in ſearching different cabinets, we found, in that of M. Duplex, a fragment of a head with two ſimilar horns, to which the following ticket was fixed: '*Horns of an animal ſome-*
'*what like a horſe, of a grayiſh colour, with a*
'*mane on the fore part of the head like a horſe.*
'*It is called here (at Pondicherry) Coeſdoes,*
'*which ſhould be pronounced* Coudous.' This ſmall diſcovery gave us great joy. We could not, however, find the name *coeſdoes* or coudous, in the writings of any voyager. We learned from the

the ticket alone, that this animal is very large, and that he is a native of the warmeſt countries of Aſia. The buffalo belongs to the ſame climate, and has alſo a mane on the top of his head. His horns, it is true, are crooked and flat, while thoſe under conſideration are round and ſtraight, which, as well as the colour, ſufficiently diſtinguiſhes theſe two animals; for the ſkin and the hair of the buffalo are black, and, according to the ticket, the hair of the coudous is grayiſh. Theſe relations ſuggeſted others: The travellers into Aſia mention large buffaloes of Bengal, reddiſh buffaloes, and grayiſh buffaloes of the Mogul empire *, called *nil-gauts*. The coudous is perhaps one or other of theſe animals. From the travellers into Africa, where the buffaloes are as common as in Aſia, we have more pointed information with regard to a ſpecies of buffalo called *pacaſſe* in Congo, which ſeems to be the coudous: 'Upon the route from Louanda 'to the kingdom of Congo, we perceived † two 'pacaſſes, which are animals reſembling buffa- 'loes, and roar like lions. The male and fe- 'male go always in company. They are white, 'with red and black ſpots. Their ears are

* In the hunting of the nil-gauts or gray oxen, which, in my opinion, are a ſpecies of elk, there is nothing particular, &c.; *Voyage de Bernier, tom.* ii. *p.* 245.

† Relation de Congo par les P. P. Michel-Ange de Galline et Denys de Charly de Plaiſance, Capucins, p. 77.

'half

'half an ell long, and their *horns are entirely* '*ſtraight*. When they ſee any perſon, they 'neither fly nor do any harm, but ſtare at the 'paſſengers.' We formerly remarked that the animal called *empacaſſa* or *pacaſſa*, in Congo *, appeared to be the buffalo. It is in fact a ſpecies of buffalo, differing from him only in the figure of the horns and colour of the hair. In a word, the pacaſſa is the coudous, which perhaps conſtitutes a different ſpecies from that of the buffalo, and perhaps is only a variety of it.

* The country of Congo produces another animal which the natives call *empacaſſa*. Some people think it is the buffalo, and others that it has only a great reſemblance to that animal. The editor of Lopes's account tells us, that it is not ſo large as a buffalo, but that it reſembles him in the head and neck.—— Dapper aſſures us, that the buffalo is called *empacaſſa* in the kingdom of Congo, and that its hair is red, and its horns black; *Hiſt. Gen. des Voyage, tom.* v. *p.* 81.

THE MUSK*.

TO finiſh the hiſtory of the goats, gazelles, chevrotains, and other animals, of this kind, which are all natives of the Old Continent, it now only remains to give that of the muſk, an animal as famous as it is little known. It

* The Tibet muſk is of the form of a roebuck: Length three feet three inches; from the top of the ſhoulders to the ſoles of the feet, two feet three inches. The upper jaw is much longer than the lower; on each ſide of which there is a ſlender tuſk, near two inches long, hanging out quite expoſed to view. In the lower jaw are eight ſmall cutting teeth, none in the upper, and in each jaw ſix grinders. The ears are long and narrow, the inſide of a pale yellow, the outſide deep brown. The chin is yellow. The hair on the whole body is erect, very long, and each marked with ſhort waves from top to bottom. The colour near the lower part is cinereous, black near the end, and ferruginous at the tips. The hoofs are ſlender and black; and the ſpurious hoofs of the fore-feet are very long. The tail is an inch long, hid in the hair. The ſcrotum is of a bright red colour; but the penis is ſo hid as ſcarce to be diſcovered, The female is leſs than the male, and her noſe ſharper. She wants the two tuſks, and has two ſmall teats. The noted drug the muſk is found in a bag or tumour, of the ſize of a hen's egg, on the belly of the male only; *Pennant's Synopſ. of Quad. p.* 56.

Capreolus moſchi; *Geſner. Quad. p.* 695.

Capra moſchi; *Aldrovand. de Quad. Biſulc. p.* 744.

Hiam, animal muſci; *Michael. Boym, Flora Sinenſis, p.* 2.

Animal moſchiferum; *Raii Syn. Quad. p.* 127. *Schrokius, Hiſt. Moſchi, p.* 1. *tab.* 1.

Animal moſchiferum, Kabarga; *Nov. Com. Petrop. tom.* iv. *p.* 393.

Muſk

It has been mentioned by all our modern naturalists, and by most travellers into Asia. Some of them have considered it as a *stag*, a *roebuck*, or a *musk goat*, and others as a large *chevrotain*. It seems, indeed, to be an ambiguous animal, participating of the nature of all these species. We may be assured, however, that its species is distinct, and different from all the other quadrupeds. It is of the size of a small roebuck; but has no horns. By this character, it resembles the *memina* or Indian musk. It has two large tusks in the upper jaw, by which it approaches to the Guiney musk. But what distinguishes the musk from all other animals, is a kind of bag near its navel, about two or three inches in diameter, in which the liquor, or rather fat humour called *musk*, is secreted, and which differs both in odour and consistence from that of the civet. Neither the Greeks nor Romans mention this animal. It was first taken notice of by the Arabians *. Gesner, Aldrovandus,

Musk animal; *Tavernier's Trav. vol.* ii. *p.* 153. *Le Brun's Trav. vol.* i. *p.* 116. *Bell's Trav. vol.* i. *p.* 88. *Strahlenberg, p.* 339. *D. Hald, China, tom.* i. *p.* 63. 324. *Grew's Museum, p.* 21.

Tragus moschiferus, Moschus; *Klein. Quad. p.* 18.

Tragulus ad umbilicum folliculum moschiferum gerens; *Brisson, Quad. p.* 97.

Moschus moschiferus, folliculo umbilicali; *Linn. Syst. Nat. p.* 91.

* Abusseid Serafi remarks, that the musk animal resembles the roebuck in the skin and colour, in the slenderness of the legs,

vandus, Kircher *, and Boym have treated pretty fully of this animal; but Grew † is the only author who has given an exact deſcription of it from a ſtuffed ſkin, which, in his time, was preſerved in the cabinet of the Royal Society of London.

This

legs, in the hoofs, in the *erect and ſomewhat bended horns*; and that it is armed with two white tuſks on the ſide of each cheek. This author alone aſſerts, that the muſk animal has horns; he has perhaps conjectured from analogy, that, as it reſembled the roebuck in other reſpects, it ought likewiſe to have horns. We have taken notice of this error, becauſe it is copied by Aldrovandus. Avicenna, when ſpeaking of the *muſk*, ſays, that it is the purſe or follicle of an animal pretty ſimilar to the roebuck, only it has two large crooked tuſks. There is a figure of this animal in the fragment of Coſmas, printed in the firſt volume of Tavernier's Travels.

* I ſay, in the firſt place, that there is a certain ſtag in the provinces of Xenſi and Chiamſi, which has a fine odour, and is called by the Chineſe *Xerchiam*, that is, the *muſk animal*. The Chineſe Atlas mentions it in the following terms: "To keep you no longer in ſuſpenſe concerning the ſignification of the word *muſchus*, I can aſſure you that I have ſeen the animal oftener than once. It has a protuberance near the navel which reſembles a ſmall purſe, becauſe it is ſurrounded with a very delicate ſkin, and covered with ſoft hair. The Chineſe call this animal *Xe*, which ſignifies *odour*, and the compound word *Xehiang* denotes the odour of the animal *Xe*, or *Se*, muſchus." It is four feet long, and as ſwift as a ſtag. The only difference is, that its hair is blacker, and it has no horns. The Chineſe eat its fleſh, which is very delicate. The provinces of Suchuen and Junnan abound with theſe animals, and they are moſt numerous in the weſtern provinces of China; *La Chine Illuſtrée de Kircher*, *p.* 256.

† The muſk deer breeds in China and the Eaſt-Indies. Not ill pictured in Calceolarius's muſeum. That in Kircher's *China Illuſtrata* faulty as to the ſnout and feet. That of Johnſton abſurd. Almoſt every where worſe deſcribed. That he is a two-

This description I have copied in the note. The year after the publication of Grew's work, in 1681,

horned animal, says Aldrovandus, all agree, except Simeon Sethi, who saith he hath but one. Neither of which is true. The description likewise given by Scaliger, and out of him by Chiocco in Calceolarius's museum, is false, and very defective. The best I find is amongst the German Transactions; to which I would have referred the reader, but that, comparing it with that I had drawn up before I met with it, I see some differences.

From his nose and to his tail, a yard and half a foot long. His head above half a foot. His neck one-fourth of a yard. His forehead three inches broad. His nose-end scarce three-fourths of an inch, being very sharp, like that of a greyhound. His ears like a coney's, about three inches long, and erect. As also his tail or scut, which exceeds not two inches. His fore-legs, a foot and two inches long, taking in foot and thigh. Near an inch over; the foot deeply cloven; with two fore hoofs, an inch and a quarter long, each a quarter of an inch over; and two heels almost as big, and therefore conspicuous. His hinder-feet are here wanting.

His hair on his head and legs about half an inch long, and rateably small. On his belly, an inch and a half long, and somewhat thicker. On his back and buttocks three inches long, thicker in proportion than any other animal, except, perhaps, some of the deer-kind, *&c.* three or four times as thick as hog bristles; consisting of brown and white portions alternately from the root to the top. On the head and legs brown. On the belly and under the scut, whitish. As it were frizled, especially on the back and belly, by a kind of undulation. Softer than in most animals, and exceeding light and rare. For, being split, and covered with a gloss, they appear to be made up of little bladders, like those in the plume or stalk of a quill; so that it is a thing betwixt a common hair and a quill. On each side his lower chop, almost under the corner of his mouth, there is a peculiar tuft, (about three-fourths of an inch long,) of short, thick, and hard hairs, or rather bristles, of equal length, as in a scrubbing brush.

The

1681, Luc Schrockius* printed at Vienna, the hiſtory of this animal, which contains nothing remarkable either for correctneſs or novelty. I ſhall, however, combine the facts which can be gathered from it with thoſe of other authors, and particularly the more modern travellers. Having never been able to procure the animal

The muſk bladder or bag is about three inches long, two over, and ſwelling out from his belly one and a half. Standing before his groin about as much. I find it cut open, whereby the obſervation of its natural aperture (which I ſuppoſe it hath as the caſtor bag) is prevented.

He hath twenty-ſix teeth. In his lower chop, ſixteen; of which there are eight little cutters before; behind four grinders on each ſide, rugged and continuous. As many like grinders in the upper jaw. About an inch and a half from the noſe-end, in the ſame jaw, on each ſide a tuſk, two inches and a half long, hooked downward, and backward, and ending in a point. Not round but flat, the breadth of half an inch; thin, and having a ſharp edge behind; ſo as it may not unfitly be likened to a ſithe. There are no horns; *Grew's Muſeum, p.* 21.

* Schrockius gives a figure, but no deſcription, of this animal. He only remarks, that it reſembles a roebuck, with the exception of having two prominent tuſks in the upper jaw, about three inches long, and directed downward; that this is the chief characteriſtic of the animal; that it varies in the colour of its hair; that its head likewiſe differs from the roebuck, and approaches to that of the wolf; that the hair is generally marked with ſeveral ſpots; and that the protuberance which contains the *muſk* is ſituated a little below the navel. He adds, that this animal is found in Tartary, in Tibet, in China, and particularly in the province of Xinſi, in Tonquin, in Pegu, in the kingdom of Aracan, and in Boutan; p. 32.——57.

itſelf,

itſelf, we are reduced to the neceſſity of collecting and digeſting what has been ſaid of it by others. From Grew's deſcription, which is the only authentic work we are poſſeſſed of, it appears that this animal has long coarſe hair, a ſharp muzzle, and tuſks like thoſe of a hog; and that, by theſe characters, it approaches the wild boar, or rather the *babirouſſa*, called the *wild Indian boar* by the naturaliſts, which, along with ſeveral characters of the hog, is, like the muſk animal, ſmaller, and has taller and more nimble limbs, reſembling thoſe of the ſtag or roebuck. On the other hand, the American hog, which we have called *pecari*, has on his back a cavity or purſe which contains an odoriferous humour; and the muſk animal has a ſimilar purſe, not on his back, but under his belly. In general, none of thoſe animals which produce odorous liquors, as the badger, the beaver, the pecari, the muſk rats, and the civet, belong to the genus of deer or goats. Hence we ſhould be led to think, that the muſk animal makes a nearer approach to the hog-kind *, of which he has the tuſks, if, at the ſame time, he had cutting teeth in the upper jaw. But, his want of theſe teeth

* Animal moſchiferum neque e cervino neque e caprino genere eſſe videtur; cornua enim non habet, et an ruminet incertum eſt; dentibus tamen inciſoribus in ſuperiore mandibula caret, ruminantium in modum, et dentes ibidem exertos habet, (*Tuſks* Anglice, *defenſes* Gallice,) velut porcus; *Raii Syn. Quad. p.* 127.

connects him with the ruminating animals, and particularly with the chevrotain, which chews the cud, though it has no horns. All these external characters, however, furnish us with conjectures only. But an examination of the internal parts can alone decide concerning the nature of this animal, which is still very little known. I have made it follow the goats and antilopes, not because it seems to have any connection with these species, but lest I should too much offend the prejudices of most naturalists.

Marco Paolo, Barbosa, and P. Philippe de Marini, are all more or less deceived in the notices they have given concerning this animal * The only

* Paolo describes it in this manner:—Its hair is coarse, like that of the stag. It has the feet and tail of a gazelle, and no horns *any more than that animal*. It has *four* teeth in the upper jaw, about three inches long, which are as delicate and white as ivory; two of them rise upward, and two turn downward; and the creature is exceedingly beautiful. During *the full moon*, it is affected with an impostume on the belly near the navel; and at this time the hunters seize the animal, and open the impostume. Barbosa says, that it is very like the gazelle; but he agrees not with other authors, when he tells us that its hair is white. The following are his words: "The *musk* is found in small white animals which resemble gazelles, and have tusks like elephants, though much smaller. A kind of impostume forms under the belly and breast of these animals, and, when the matter is ripe, the tumour grows so itchy, that they rub it against the trees: The matter which falls down in small grains is the most perfect *musk*." Thevenot's description seems to correspond still better with the others. "In these countries," says he, "there is an animal with a muzzle similar to that of the fox, but whose body exceeds not the size of a hare. His hair resembles

only fact in which they agree is, that the *muſk* is formed in a pouch or tumour near the navel; and it appears from their teſtimonies, as well as thoſe of other travellers, that the male alone produces the *muſk*; that the female has the ſame pouch near the navel, but that the humour ſecreted in it has not the ſame odour; that this tumour of the male is not filled with *muſk*, except in the rutting ſeaſon; and that, at other

bles that of the ſtag, and he has the teeth of a dog: He produces excellent muſk in a bladder under the belly, which is full of corrupted blood; and this blood compoſes, or rather is the muſk itſelf. The natives cut away this bladder, and cover the cut part of it with leather, to prevent the diſſipation of the odour. But, after this operation, the animal ſoon dies." The deſcription given by Pigafetta, who ſays that the muſk is of the ſize of a cat, correſponds not with that of other authors; neither does that of P. Philippe, who makes the head of the muſk reſemble the head of a wolf: And P. Kircher, in the figure he has given of this animal, repreſents it with the ſnout of a hog, which is perhaps an error of the engraver, who has likewiſe given it claws inſtead of cloven hoofs. Simeon Sethi recedes ſtill farther from truth, when he makes the muſk as large as an unicorn, and even a ſpecies of that animal. "The *muſk* of leaſt value," ſays he, "is brought from China and the Eaſt Indies, and is of a blackiſh colour. The *muſk* is formed below the navel of a large animal with one horn, and which has a reſemblance to the roebuck. In the rutting ſeaſon, a maſs of clotted blood collects round his navel, and produces a ſwelling, the pain of which prevents him from eating or drinking: He then rolls himſelf on the earth, breaks the tumour, and diſcharges the blood, which, after coagulating, acquires a fine odour." All theſe authors agree, in the manner in which the *muſk* is formed in a bladder or tumour near the navel, when the animal ruts; *Anciennes Relations des Indes & de la Chine*, *p.* 216.

times, the quantity of this humour is ſmaller, and its odour weaker.

With regard to the *muſk* itſelf, its eſſence is perhaps as little known as the nature of the animal from which it is procured. All travellers agree, that this ſubſtance is perpetually adulterated with blood, or other drugs, by the venders. The Chineſe not only augment its ſize, by mixture, but they endeavour to increaſe its weight by incorporating with it finely powdered lead. The *muſk* that is pureſt, and in moſt requeſt among the Chineſe themſelves, is that which drops ſpontaneouſly from the animal upon ſtones or trunks of trees, againſt which it rubs, when the matter is too abundant, or begins to irritate the pouch where it is formed: That found in the pouch itſelf is ſeldom ſo good; becauſe it is not fully ripe, or rather becauſe it is during the rutting ſeaſon only that it acquires its greateſt ſtrength and odour; and, at this period, the animal endeavours to get rid of a matter which is too highly exalted, and occaſions itching and ſome degree of pain. Both Chardin * and Tavernier

* It is well known, that *muſk* is the excrementitious matter of an animal which reſembles the wild goat, except that its body and limbs are more delicate. It is found in High Tartary, in the north of China, and in Tibet, which is a kingdom between India and China. I never ſaw theſe animals alive, but I have ſeen their ſkins in many places. There are figures of them in the Dutch ambaſſador's lodgings at China, and in the *China Illuſtrata* of Kircher. It is commonly ſaid, that

vernier have well deſcribed the methods practiſed by the Orientals to adulterate *muſk*. The merchants

that the *muſk* is the ſweat of the animal, which runs down and is collected in a thin bladder near the navel. But the natives of the Eaſt tell us with more preciſion, that it is formed in an abſceſs within the body, and near the navel of this goat, the humour of which produces an itching and prickling pain, eſpecially when the animal is in ſeaſon; that, by rubbing againſt trees or rocks, the abſceſs burſts, and the matter is diffuſed between the muſcles and the ſkin, where it collects and forms a kind of bliſter or bladder; and that the internal heat exalts this corrupted blood, and gives it the ſtrong odour of *muſk*. This bladder is called *the navel of the muſk*, or *the odoriferous navel*. The Eaſtern people prefer the Tibet *muſk* to that of China, whether it is really a ſtronger odour, or only appears ſo, becauſe it arrives to them freſher, Tibet being nearer to them than the province of Xinſi, which produces more *muſk* than any other diſtrict of China. The great *muſk* trade is carried on at Boutan, a celebrated town in the kingdom of Tibet. The Patans go there to purchaſe it; and they diſtribute it all over India, from whence it is tranſported through the whole earth. The Patans border on Perſia and High Tartary, and are ſubject or rather tributary to the Great Mogul. The Indians make great uſe of this aromatic drug. They employ it in their perfumes, confections, and every compoſition they have been accuſtomed to prepare for the purpoſes of provoking love, or of reſtoring loſt vigour. The women uſe it to diſſipate the vapours which aſcend from the uterus to the brain, by fixing a bladder of it on their navel; and when the vapours are violent and perpetual, they take the *muſk* out of the bladder, tie it in a ſmall linen bag, and apply it to a place which modeſty permits not to be named.——It is commonly alledged, that, when the muſk-bag is cut open, ſo ſtrong an odour burſts out, that the hunter is obliged to have his mouth and noſe covered with ſeveral folds of linen; and that, notwithſtanding this precaution, the force

merchants muſt neceſſarily augment the quantity of it beyond conception; for, in one year, Tavernier * purchaſed 1663 bags, which ſuppoſes an

of the odour is often ſo great as to produce a mortal hæmorrhagy. I made a particular inquiry into this fact, and, having heard ſimilar accounts from ſome Armenians who had been at Boutan, I am inclined to think it is true; becauſe this drug, inſtead of acquiring, loſes its odour in proceſs of time. Now, this odour is ſo ſtrong in India, that I was unable to bear it. When I dealt in *muſk*, I ſtood always in the open air, with a handkerchief on my face, and at a diſtance from thoſe who handled the bladders, and brought them to my broker. I then perceived that *muſk*, when freſh, is extremely heady, and quite inſupportable. I ſhall only add, that there is no drug ſo eaſily or ſo frequently adulterated. Some bags are only pieces of the animal's ſkin, filled with its blood, and a ſmall quantity of *muſk* to give it an odour, inſtead of that bladder formed by the wiſdom of Nature near the navel to receive this wonderful and odoriferous humour. With regard to the genuine bladders, when the hunters find that they are not full, they ſqueeze the animal's belly, and fill them with blood; for they believe that the blood of the muſk, and even its fleſh, has a fine ſcent. The merchants afterwards mix the *muſk* with lead, ox's blood, and other ſubſtances proper for augmenting its weight. The Eaſtern people employ ſeveral modes of detecting this falſification, without opening the bag: They learn from experience to diſtinguiſh the proper weight of an unadulterated bag. They likewiſe know by the taſte. Hence the Indians never purchaſe *muſk* without taſting ſmall grains of it, which they ſqueeze out of the bags. In fine, they take a thread ſteeped in garlic juice, and draw it through the bag with a needle: If the odour of the garlic be extinguiſhed, the *muſk* is good, and if the thread preſerves the ſcent of the garlick, the *muſk* is adulterated; *Voyage de Chardin, tom.* ii. *p.* 16.

* The beſt, and the greateſt quantities of *muſk* come from the kingdom of *Boutan*, from which it is carried for ſale to Patna, the chief town of Bengal. All the *muſk* ſold in Perſia

is

an equal number of animals. But, as this animal is no where domeſtic, and the ſpecies confined to a few provinces of the Eaſt, it cannot poſſibly

is tranſported from thence. I had the curioſity to carry a ſkin of this animal to Paris, and have given a figure of it.

After killing the animal, the peaſants cut off the bag, which is of the ſize of an egg, and is ſituated nearer the organs of generation than the navel. They next take out the *muſk*, which then has the appearance of clotted blood. When they want to adulterate it, they put a maſh of the animal's liver and blood in the place of the muſk they had extracted. In two or three years, this mixture produces certain ſmall animals which eat the good *muſk*; ſo that, when opened, a great defalcation is diſcovered. Others, after extracting a portion of the muſk, put in ſmall pieces of lead, to augment the weight. The merchants who tranſport *muſk* to foreign countries love this trick better than the other, becauſe none of theſe ſmall animals are produced by it. But the deceit is ſtill worſe to diſcover, when, of the ſkin taken from the belly of a young animal, they make little bags, which they ſew ſo dexterouſly with threads of the ſame ſkin, that they reſemble genuine bags. Theſe they fill with what they take out of the genuine bags, and ſome fraudulent mixture, which it is extremely difficult for the merchants to detect. When the bags are ſewed, immediately upon their being cut, without allowing any part of the odour to diſſipate in the air, after they have abſtracted as much of the *muſk* as they think proper, if a perſon applies one of theſe bags to his noſe, blood will be drawn by the mere force of the odour, which muſt neceſſarily be weakened or diluted, in order to render it agreeable, without injuring the brain. The odour of the animal I brought to Paris was ſo ſtrong, that it was impoſſible to keep it in my chamber. It made every head in the houſe giddy; and I was obliged to put it in a barn, where my ſervants at laſt cut away the bag: The ſkin, notwithſtanding, always retained a portion of the odour. Theſe animals are not found in a lower latitude than the fifty-ſixth degree. But

poſſibly be ſo numerous as to produce ſuch a quantity of this matter. Moſt of theſe pretended bags, therefore, muſt be little artificial bladders made of the ſkin of other parts of the animal's body, and filled with blood and ſmall portions

in the ſixtieth they are very numerous, the country being full of woods. In the months of February and March, it is true, after ſuffering much hunger in their favourite clime, on account of the ſnow, which is ſometimes ten or twelve feet deep, they come ſouthward as far as the forty-fourth or forty-fifth degree, in order to procure grain or freſh rice. During this period, the peaſants lie in wait for theſe animals with ſnares, and kill them with arrows and bludgeons. Some of them, I was aſſured, are ſo meagre and languiſhing with the hunger they ſuffer, that they are eaſily taken. Theſe animals muſt be extremely numerous; for each of them has but one bag, and the largeſt bag, which ſeldom exceeds the ſize of a hen's egg, cannot furniſh above half an ounce of *muſk*: Three or four of them are ſometimes neceſſary to afford a ſingle ounce.

The King of Dantan, apprehenſive that the practice of adulterating the *muſk* would injure the commerce of his kingdom, eſpecially as it is alſo produced, though dearer and in leſs quality, in Tonquin and Cochinchina, ordered, ſome time ago, that none of the bags ſhould be ſewed, but that the whole of them ſhould be brought open to Boutan, the place of his reſidence, to be examined and ſealed with his own ſeal. All thoſe I purchaſed were of this kind. But, notwithſtanding all the precautions of the King, the peaſants open the bags in a crafty manner, and put into them ſmall pieces of lead, which the merchants tolerate, becauſe lead, as formerly remarked, does not ſpoil the *muſk*, but only augments the weight. In one of my voyages to Patna, I purchaſed 1663 bags, which weighed 2557 ounces and a half; and the *muſk*, when taken out of the bags, weighed 452 ounces; *Les Six Voyages de Jean-Baptiſte Tavernier en Turquie, en Perſe, et aux Indes, tom.* iv. *p.* 75.

of

of the true *muſk*. It affords, in fact, the ſtrongeſt of all known odours. A ſmall bit of it perfumes a large quantity of matter. The odour of a ſmall particle extends through a conſiderable ſpace. It is likewiſe ſo fixed and permanent, that, at the end of ſeveral years, it ſeems to have loſt no part of its activity.

The BABIROUSSA, or INDIAN HOG*.

THOUGH we have only the head of this animal in the Royal Cabinet, it is too remarkable to be paſſed over in ſilence. All naturaliſts have regarded it as a ſpecies of hog; and yet it has neither the head, the ſtature, the briſtles, nor the tail of a hog. Its legs are longer, and its muzzle ſhorter. It is covered with ſhort hair, as ſoft as wool, and its tail terminates in

* The Indian hog has four cutting teeth in the upper, ſix in the lower, and ten grinders in each jaw. In the lower jaw, there are two tuſks pointing towards the eyes, and ſtanding near eight inches out of their ſockets. From two ſockets on the outſide of the upper jaw, there are two other tuſks, twelve inches long, bending like horns, their ends almoſt touching the forehead. The ears are ſmall, erect, and ſharp pointed. Along the back are ſome ſmall briſtles. On the reſt of the body only a ſort of wool, ſuch as is on lambs. The tail is long, ends in a tuft, and is often twiſted. The body is plump and ſquare, not of that elegant form which Bontius and Nieuhoff give it, as appears from an original drawing Mr. Loten favoured me with; *Pennant's Synopſ. of Quad. p.* 74.

Aper in India, &c. *Plin. lib.* viii. *c.* 52.

Babyrouſſa; *Bontius, India, p.* 61. *Grew's Muſæum, p.* 27. *Raii Synopſ. Quad. p.* 26. *Klein. Quad. p.* 25. *Seba Muſ. tom.* i. *p.* 80. *tab.* 50. *Valentin, Amboin. tom.* iii. *p.* 268.

Strange hog; *Purchas's Pilgrim, vol.* ii. *p.* 566. *Nieuhoff's Voy. p.* 195.

Sus

in a tuft. Its body, likewiſe, is neither ſo heavy nor ſo thick as that of the hog. Its hair is gray, mixed with red and a little black. Its ears are ſhort and pointed. But the moſt remarkable character, which diſtinguiſhes the babirouſſa from all other animals, conſiſts in four large tuſks or canine teeth, the two ſhorteſt of which proceed, like thoſe of the wild boar, from the under jaw, and the two longeſt, by piercing the cheeks, or rather the lips, from the upper jaw, and extend in a curve above the eyes. Theſe tuſks are a beautiful ivory, which is cleaner and finer, but not ſo hard as that of the elephant.

The direction of the two ſuperior tuſks, which firſt riſe high and then bend in the form of a circle, induced ſome able natural philoſophers, ſuch as Grew *, to think, that theſe tuſks ought not to be regarded as teeth, but as horns. They

Sus babyruſſa, dentibus duobus caninis fronti innatis; *Linn. Syſt. Nat. p.* 104.

Sus caudatus, dentibus caninis ſuperioribus, ab origine ſurſum verſis, arcuatis, cauda floccoſa; Aper Orientalis. Le Sanglier des Indes; *Briſſon. Quad. p.* 76.

Babirouſſa ſeu porcus Indicus. Iconem animalis in inſula Java Novæ Bataviæ, Januar. 1650, depictam, et cranii quod Hafniæ vidi, naturæ ſtudioſorum in gratiam addendam exiſtimavi: *Th. Bartholini Hiſt. Anat. cent.* II. *hiſt.* 96. *fig. ibid.*

* On his upper jaw, he has two horns. —— *Bartholine* calls them teeth, yet are they not teeth, but *horns*; becauſe they are not, as all teeth, even the tuſks of an *elephant*, fixed in the jaw, with their roots upward, but downward: And ſo their *alveoli* are not open downward within the mouth, but upward upon the top of the ſnout, &c.; *Grew's Muſ. Reg. Soc. p.* 28.

founded

founded their opinion upon this circumſtance, that, in all animals, the ſockets of the teeth in the upper jaw open downward; that, in the babirouſſa, all the ſockets likewiſe open downward, except thoſe of the two great tuſks, which open upward; and hence they conclude, that, from this eſſential character of the upper teeth, theſe tuſks, whoſe ſockets open upward, cannot be regarded as teeth, but as horns. Theſe philoſophers, however, were deceived. Poſition or direction are circumſtances by no means eſſential to the exiſtence of an object. Theſe tuſks, though ſituated in a manner oppoſite to that of other teeth, are ſtill teeth; the ſingularity of their direction cannot alter their nature, or convert a true canine tooth into an ivory horn.

Theſe enormous quadruped tuſks give this animal a formidable appearance; yet he is leſs dangerous, perhaps, than our wild boar. They go in herds, and have a ſtrong odour, which betrays them to the dogs, who often hunt them with ſucceſs. They growl in a frightful manner *, and fight and defend themſelves with their under tuſks, the upper ones being rather incommodious than ſerviceable to them. Though brutal and ferocious, they are eaſily tamed; and their fleſh, which is very good, corrupts in a ſhort time. As their hair is fine and their ſkin thin, they make little reſiſtance to the teeth

* Muſ. Worm. p. 340. Piſon. Apend. in Bont. p. 61.

of

of the dogs, who hunt them in preference to the boar, and accompliſh their purpoſe with eaſe. In order to reſt their head, or to ſleep in a ſtanding poſture, they hook their upper tuſks to the branches of trees *. This practice is common to them, and the elephant, which, to repoſe without lying down, ſupports its head by putting the ends of its tuſks into holes that it digs for this purpoſe in the wall of its apartment †.

The babirouſſa differs likewiſe from the wild boar in natural appetites. He feeds upon herbs and the leaves of trees, and never enters the gardens to devour pot-herbs: But the boar, even in the ſame country, lives upon wild fruits and roots, and often lays waſte the gardens. Beſides, theſe animals, which go equally in herds, never intermix; the wild boars keep to one ſide, and the babirouſſas to the other. The latter walk lightly, have a very fine ſcent, and often riſe erect againſt the trees, in order to ſmell at a diſtance the approach of dogs or hunters. When hard purſued, they run into the ſea, where, by ſwimming with as much facility as ducks, and even diving, they often eſcape the hunters; for they ſwim a long time, and ſometimes to great diſtances from one iſland to another.

The babirouſſa is found not only in the iſland of Bouro or Boero, near Amboina, but in ſeveral

* Deſcript. des Indes Orient. par Franc. Valentin, tom. iii. p. 268.

† See above, art. *Elephant*.

other parts of the ſouth of Aſia* and Africa, as in Celebes, Eſtrila †, Senegal ‡, and Madagaſcar; for it appears that the wild boars of this iſland mentioned by Flacourt ||, *the males of which*, he remarks, *have chiefly two horns on the ſide of the noſe*, are babirouſſas. We have not been able to determine, whether the females be deprived of theſe two tuſks, which are ſo remarkable in the male.

SUPPLEMENT.

WE are now enabled to give a figure of the babirouſſa from two drawings, one of which

* The babirouſſas are numerous in the iſlands of Boero, Cajely, Xoelaſche, Xoela, Mangoli, Bangay on the weſt coaſt of Celebes, and in Manado; *Deſcript. des Indes Orientales par François Valentin, tom.* iii. *p.* 369. Moſt of the facts we have related, regarding the hiſtory of the babirouſſa, are taken from Valentin's work.

† Among other articles of merchandiſe the Dutch bring from the coaſt of Eſtrila, are wild boars tuſks, which are more beautiful than thoſe of the elephant; *Lade's Voyage, tom.* i.

‡ I at laſt perceived one of theſe enormous wild boars, which are peculiar to Africa. — It was black, like thoſe of Europe, but in ſtature it was vaſtly taller. It had four large tuſks, the two ſuperior of which bended in a circular form toward the front, and had the appearance of horns; *Voyage au Senegal, par M. Adanſon, p.* 76.

|| Voyage á Madagaſcar, par Flacourt, p. 152.

was

Plate CCVI.

A. Bell Sculp.t

BABIROUSSA.

was tranſmitted to us by M. Sonnerat, where the animal is repreſented in a ſtanding poſture; and the other, which is lying on its belly, was ſent to us from England by Mr. Pennant. This laſt drawing was accompanied with the following inſcription: 'A Babirouſſa from the iſland of 'Banda, drawn after nature. Its colour is blackiſh. 'It grows to the ſize of the largeſt hog; and its 'fleſh is very good to eat.' Our figure is a combination of both drawings, and, though it cannot be perfectly exact, it exhibits a pretty juſt idea of the animal.

The CABIAI, or THICK-NOSED TAPIR*.

THIS animal was never ſeen in Europe, till the Duke de Bouillon had a young one tranſmitted to him from America. As this Prince is exceedingly curious with regard to foreign animals, he has ſometimes done me the honour of inviting me to examine them, and has even been kind enough to preſent me with ſe-

* The thick-noſed tapir has the fore-hoofs divided into four, and the hind hoofs into three, a very large and thick head and noſe, ſmall rounded ears, and large black eyes. The upper jaw is longer than the lower. There are two ſtrong and great cutting teeth in each jaw; eight grinders in each jaw, and each of theſe grinders form on their ſurface ſeemingly three teeth, each flat at their ends. The legs are ſhort, and the toes long, connected near their bottoms by a ſmall web; their ends are guarded by a ſmall hoof. It has no tail. The hair on the body is ſhort, rough, and brown. On the noſe there are long and hard whiſkers, It grows to the ſize of a hog of two years old; *Pennant's Synopſ. of Quad. p.* 83.

Caby-bara; *Marcgrav. Braſil, p.* 230. *Piſo, Braſil, p.* 99. *Raii Synopſ. Quad. p.* 126.

River hog; *Wafer in Dampier, vol.* iii. *p.* 400.

Cochon d'eau; *Des Marchais, tom.* iii. *p.* 315.

Sus maximus paluſtris. Cabiai, cabionara; *Barrere, Franc. Equin. p.* 160.

Capivard; *Froger's Voyage, p.* 99.

Sus hydrochærus, plantis tridactylis, cauda nulla; *Linn. Syſt. Nat. p.* 103.

veral

veral ſpecies. The animal under conſideration was killed by the coldneſs of the climate before it had acquired its full growth. It is not a hog, as has been alledged by naturaliſts and travellers; for it has only ſome ſlight relations to the hog, and differs from him in ſome remarkable characters. The cabiai never exceeds the ſize of a hog of eighteen months old. Its head is ſhorter, and its mouth leſs. Its feet are alſo very different from thoſe of the hog; for its toes are connected by membranes. It has larger eyes and ſhorter ears. In diſpoſitions and manners, it differs not leſs from the hog, than in the ſtructure of its parts. It lives much in the water, where it ſwims like an otter, catches fiſhes with its mouth and feet, and eats them on the banks. It likewiſe eats grain, fruits, and ſugar canes. As its feet are long and broad, it often ſits on the hind ones. Inſtead of the grunting of a hog, its cry rather reſembles the braying of an aſs. It ſeldom walks but in the night, and then generally in company, without removing far from the margin of the water. As it runs badly, on account of the length of its feet, and the ſhortneſs of its legs, its ſafety conſiſts not in flight. To eſcape the hunters, it plunges into the water, ſwims to a great diſtance, and remains ſo long concealed that they loſe all hopes of getting another view of it. The fleſh of it is fat and tender; but, like that of the otter, it has rather the taſte of bad fiſh than of good fleſh. It

has been remarked, however, that its head is pretty good, which correſponds with what is ſaid of the beaver, that the fleſh of its anterior parts is well taſted, while that of the poſterior parts has the taſte of fiſh. The cabiai is of a gentle and peaceable diſpoſition; it neither quarrels, nor does miſchief to other animals. It is eaſily tamed, obeys the voice, and follows ſpontaneouſly thoſe with whom it is acquainted, and who treat it kindly. At Paris, it was fed with barley, ſalads, and fruits, and continued in good condition during the warm ſeaſon. From the great number of paps, it appears, that the female is very prolific. We are ignorant of the times of geſtation and growth, and conſequently of the duration of its life. Our coloniſts at Cayenne might inform us with regard to theſe articles; for this animal is pretty common in Guiana, as well as in Braſil, the country of the Amazons, and other low lands of South America.

SUPPLEMENT.

WE have little to add to the hiſtory and deſcription of this American animal. M. de la Borde writes us, that it is very common in Guiana, and ſtill more ſo in the neighbourhood of

of the Amazon river, where the fiſhes are very numerous. He remarks, that theſe animals go always in pairs, a male and a female; and that the largeſt of them weigh about a hundred pounds. They fly from the abodes of men, never leave the banks of rivers, and, when they perceive any perſon, they take to the water, without diving like the otters, but ſwimming like the hogs. Sometimes, however, they go to the bottom, and continue there a conſiderable time. They are often taken when young, and brought up in the houſes, where they eaſily accuſtom themſelves to eat bread, millet, and pot-herbs, though, in a ſtate of nature, they live chiefly on fiſhes. The females bring forth only one young at a time. They are by no means dangerous; for they never attack either men or dogs. Their fleſh is white, tender, and well taſted. This laſt fact ſeems to contradict what is ſaid by other travellers, that the fleſh of the cabiai has rather the taſte of bad fiſh, than of good meat. However, the fleſh of the cabiai, when it lives on fiſh, may have this bad taſte, and, when fed with bread or grain, it may be very good.

As we had this animal alive in Paris, and kept it a long time, I am perſuaded that it might be propagated in our climate. I mentioned above, p. 65. that it was killed by the cold. But I have ſince been informed, that it

endured the winter's cold very well; but, as it was ſhut up in a garret, it threw itſelf down from the window, and fell into a veſſel full of water, where it was drowned; which would not have happened, if it had not been hurt in the fall upon the edge of the veſſel.

Plate CCVII.

A.Bell. Sculp!

CABIAI.

THE PORCUPINE*.

THE name given to this animal in moſt European languages leads to the notion that it is a hog covered with briſtles, though it has no reſemblance to the hog but in the grunt-

* The porcupine has two cutting teeth in each jaw; the body is covered with long, hard, and ſharp quills, and the upper lip is divided. The creſted porcupine has a long creſt on the top of the head, reclining backward, and formed of ſtiff briſtles. The body is covered with long quills; thoſe on the hind part of the body being nine inches in length, very ſharp at the ends, and varied with black and white. Between the quills are a few hairs. The head, belly, and legs are covered with ſtrong briſtles, terminated with ſoft hair of a duſky colour. The whiſkers are long, and the ears are like the human. It has four toes before, and five behind. The tail is ſhort, and covered with quills. The length, from noſe to tail, is two feet, and that of the tail four inches; *Pennant's Synopſ of Quad. p.* 262.

In Greek and Latin, *Hyſtrix*; in Arabic, *Tzur-ban*, according to Dr. Shaw; in German, *Stachelſchwein*; in Italian, *Porco ſpinoſo*; in Spaniſh, *Puerco-eſpino*; in French, *Porc-epic.*

Hyſtrix; *Plin. lib.* viii. *c*, 35. *Geſner. Quad. p.* 563. *Raii Synopſ. Quad. p.* 206.

Porc-epic; *Mem. pour Servir à l'Hiſt. des Animaux, part.* ii. *p.* 33. *tab.* 41.

Hyſtrix orientalis criſtata; *Seba, tom.* i. *p.* 79. *tab.* 1. *fig.* 1. In Seba's figure, there are only three toes on the hind feet, inſtead of five.

Hyſtrix capite criſtato; *Briſſon. Quad. p.* 85.

Hyſtrix criſtata, palmis tetradactylis, plantis pentadactylis, capite criſtato, cauda abbreviata; *Lynn. Syſt. Nat. p.* 76. *Haſſelquiſt. Itin. p.* 290.

ing noiſe it makes. It differs from the hog as much as any other quadruped, both in figure and internal ſtructure. Inſtead of a long head, furniſhed with long ears, armed with tuſks, and terminated by a ſnout; inſtead of cloven feet, covered with hoofs, like the hog; the porcupine has a ſhort head, like the beaver, two large cutting teeth in each jaw, no tuſks or canine teeth, the upper lip divided like that of the hare, round flat ears, and feet armed with claws. Inſtead of a large ſtomach with an appendix ſhaped like a cowl, which, in the hog, ſeems to form the ſhade between the ruminating and other quadrupeds, the porcupine has only a ſimple ſtomach and a large cæcum. The parts of generation are not apparent, as in the boar; and the teſticles are hid in the groins. From theſe characters, joined to the ſhort tail, the long whiſkers, and the divided lip, we may conclude that the porcupine makes a nearer approach to the hare or the beaver than to the hog. The hedge-hog, which, like the porcupine, is armed with prickles, has a greater reſemblance to the hog; for its muzzle is long, and terminates in a kind of ſnout. But, all theſe reſemblances being ſlight, and the differences conſpicuous, the porcupine unqueſtionably conſtitutes a particular ſpecies, totally diſtinct from that of the hedge-hog, the beaver, the hare, or any other animal to which fancy may compare it.

Travellers

Travellers and naturaliſts have attributed to the porcupine the faculty of darting its quills to a diſtance, and with ſuch force as to inflict deep wounds: They have likewiſe ſaid, that the quills, when ſeparated from the body of the animal, poſſeſs the extraordinary power of penetrating, by their own proper exertion, deeper into the fleſh, as ſoon as their points have entered. This laſt fact is purely imaginary, and the firſt is equally falſe as the ſecond. The error ſeems to have originated from this circumſtance, that the porcupine, when irritated, erects and moves his quills; and, as ſome of them are attached to the ſkin by a delicate pedicle only, they eaſily fall off. We have examined living porcupines, and, though violently agitated, we never ſaw them diſcharge their quills like darts. It is not a little ſurpriſing, therefore, that the graveſt authors, both ancient * and modern †, as well as

* Ariſt. Hiſt. Anim. lib. ix. cap. 39. Plin. Hiſt. Nat. lib. viii. cap. 53. Oppian. de Venatione.

† Thoſe quills, ſay the anatomiſts of the academy of ſciences, which were ſtrongeſt and ſhorteſt, eaſily parted from the ſkin, being leſs firmly attached to it than the others. Theſe are likewiſe the quills which the porcupines dart againſt the hunters, by ſhaking their ſkin as dogs do when they come out of the water. Claudian, in the ſame manner, remarks, that the porcupine is himſelf the bow, the quiver, and the arrow, which he employs againſt the hunters; *Mem. pour Servir a l'Hiſt. des Animaux, tom.* iii. *p.* 114. *Note*, Fable is the province of the poet; and therefore Claudian merits no reproach. But the anatomiſts of the academy ſhould not have adopted this fable, which they ſeem to

as the moſt ſenſible travellers *, ſhould join in giving their ſuffrages to a falſehood. Some of them tell us, that they themſelves have been wounded by theſe darts: Others affirm, that the quills are diſcharged with ſuch violence as to pierce a plank at the diſtance of ſeveral paces †. The marvellous always augments and gathers force in proportion to the number of heads through which it paſſes. Truth, on the contrary, loſes in performing the ſame route. Notwithſtanding the abſolute negative I have ſtamped on theſe two fictions, I am perſuaded that it will ſtill be repeated by a thouſand future writers, that the porcupine darts his quills, and that theſe quills, when ſeparated from the animal, penetrate deeper, by their own proper exertion, into the bodies which they have once entered ‡.

The

have done for no other purpoſe than that of quoting Claudian; for, from their own account, it appears that the porcupine does not dart his quills to a diſtance, but that they only fall off when he ſhakes himſelf; *Wormius, Muſ. Wormian. p.* 235. *Wotton. p.* 56. *Aldrov. de Quad. Digit. p.* 473. and ſeveral other reſpectable writers, have adopted this error.

* Tavernier, tom. ii. p. 20. Kolbe, tom. iii. p. 46. Barbot, Hiſt. Gen. des Voyages, tom. iv. p. 237.

† When the porcupine is enraged, he darts his quills, which are ſometimes two ſpans in length, with ſuch rapidity and force, againſt men and other animals, that they will pierce a plank of wood; *Voyage en Guinée, par Boſman, p.* 253.

‡ From this group of credulous travellers, we muſt except Dr. Shaw. 'Of the many porcupines which I have ſeen in Africa, I never knew any of them, though very much provoked,

The porcupine, though originally a native of the warmeſt climates of Africa and India, can exiſt and multiply in colder countries, ſuch as Perſia, Spain, and Italy. Agricola remarks, that the porcupine was not tranſported into Europe long before his time. It is found in Spain, and more commonly in Italy, particularly in the Apennine mountains in the environs of Rome. It was from this laſt place that M. Mauduit, who, ſtimulated by his love of natural hiſtory, ſent us the porcupine which M. Daubenton has deſcribed. We have given the figure of this Italian porcupine, as well as that of India. The ſlight differences between them depend on the climate, or perhaps they are only individual varieties.

voked, that could dart their quills. Their uſual method of defence is, to recline themſelves on one ſide, and, upon the enemy's near approach, to riſe up quickly, and gore him with the erected prickles upon the other;' *Shaw's Travels*, *p.* 176. P. Vincent Marie by no means aſſerts that the porcupine darts his quills: He only ſays, that this animal, when he meets with ſerpents, againſt whom he carries on a perpetual war, rolls himſelf up like a ball, concealing his head and feet, and then rolls upon, and kills them with his briſtles, without running any riſk of being wounded. He adds, what we believe to be true, that, in the ſtomach of the porcupine, different kinds of bezoar are formed. Some of theſe are only a maſs of roots enveloped with a cruſt; others, which are ſmaller, ſeem to be compoſed of pieces of ſtraw and ſand; and the ſmalleſt kind, which exceed not the ſize of a nut, appear to be real petrifactions. We have no doubt as to the truth of theſe facts; for we found a bezoar of the firſt kind, or an ægagropilus, in the ſtomach of a porcupine which was ſent to us from Italy.

Ariſtotle,

Ariſtotle, Pliny, and all the naturaliſts, tell us, that the porcupine, like the bear, conceals itſelf during the winter, and brings forth in thirty days. Theſe facts we have not been able to aſcertain; and it is ſingular, that, in Italy, where the animal is common, and where, at all periods, there have been learned philoſophers and acute obſervers, no man has ever written its hiſtory. On this ſubject, as well as on many others, Aldrovandus has only copied Geſner; and the Gentlemen of the Academy, who have deſcribed and diſſected eight porcupines, ſay little or nothing concerning their œconomy and manners. We only learn from the teſtimony of travellers, and of thoſe who keep the porcupine in menageries, that, in a domeſtic ſtate, it is neither wild nor ferocious, but only anxious for liberty; and that, by the aſſiſtance of its fore teeth, which are ſtrong and ſharp, like thoſe of the beaver, it cuts wood, and pierces the door of its cage *. We likewiſe know, that it is eaſily fed upon crumbs of bread, cheeſe, and fruits; that, in a ſtate of liberty, it lives upon roots and wild ſeeds; that, when it gets admiſſion to a garden, it makes great havock, and devours all kinds of pot-herbs with avidity; that, like moſt other animals, it

* There are porcupines in Guiney. They grow to the height of two or two and a half feet, and their teeth are ſo ſharp and ſtrong that no wood can reſiſt them. I put one into a barrel, imagining that it was ſufficiently ſecured: But, in one night, it gnawed through the wood, and made its eſcape; *Voyage de Boſman, p.* 253.

becomes

becomes fat about the end of ſummer; and that its fleſh, though ſomewhat inſipid, is not bad to eat.

By examining the form, ſubſtance, and organization of the quills, we eaſily perceive that they are tubes, and only want vanes to be real feathers. From this circumſtance, the porcupine conſtitutes the ſhade between quadrupeds and birds. The quills, particularly thoſe near the tail, make a noiſe by ſtriking each other when the animal walks. He can elevate or depreſs his quills, as the peacock raiſes or lowers the feathers of his tail. Hence the muſcular part of the ſkin is capable of acting with force, and its ſtructure is nearly the ſame with that of ſome birds. We have marked theſe relations, though not very apparent. It is always fixing one point in Nature, who often eſcapes our reſearches, and ſeems, in her productions, to ſport with thoſe who wiſh to cultivate her acquaintance.

The COENDOU, or BRASILIAN PORCUPINE*.

IN every article we have treated of, there are more errors to detect than truths to relate. The ſource of theſe errors is to be derived from this circumſtance, that, of late, the hiſtory of animals

* The Braſilian Porcupine has a ſhort blunt noſe, and long white whiſkers. Beneath the noſe is a bed of ſmall ſpines. The top of the head, back, ſides, and baſe of the tail, are covered with ſpines. The longeſt on the lower part of the back and tail are three inches in length, very ſharp, white, and barred near their points with black. They adhere cloſely to the ſkin, which is quite naked between them. They are ſhorter and weaker as they approach the belly; and, on the breaſt, belly, and lower part of the legs, they are converted into dark brown briſtles. The feet are divided into four toes, and the claws are very long. On the place of the thumb, there is a great protuberance. The tail is eighteen inches long, ſlender, and taper towards the end; the laſt ten inches of it is almoſt naked, having only a few hairs on it, and has, for that length, a ſtrong prehenſile quality; *Pennant's Synopſ. Quad. p.* 264.

Coendou; the name of this animal in Guiana;

Coendou; *Miſſion du P. d'Abbeville au Maragnon, p.* 249.

Hoitztlacuatzin, ſeu tlacluatzin, ſpinoſo hyſtrice Novæ Hiſpaniæ; *Hernandez, Hiſt. Mex. p.* 322. *Nieremberg, p.* 154.

Ourico caheiro, *Marcgrav. Braſil. p.* 233. *Piſo, Braſil. p.* 99. 325.

Hyſtrix Americanus; *Raii Synopſ. p.* 208.

Hyſtrix prehenſilis, pedibus tetradactylis, cauda elongata, prehenſili, ſeminuda; *Linn. Syſt. Nat. p.* 76.

Hyſtrix

A Bell Sculp.t

PORCUPINE.

Plate CCIX.

A. Bell Sculpt.

PORCUPINE.

animals has been ſolely compoſed by men who are prejudiced with methodical arrangements, and who miſtake their trifling ſyſtems for the genuine regiſters of Nature. No animals belonging to the warm climates of the Old Continent exiſt in America; neither are any of the South American animals to be found under the Torrid Zone of Africa and Aſia. The porcupine, as formerly remarked, is an original inhabitant of the warm countries of the Old World; and, having never been found in the New, his name has been transferred to ſuch animals as reſembled him, and particularly that now under conſideration. On the other hand, the coendou of America has been tranſported to the Eaſt Indies; and Piſo, who probably knew not the porcupine, made Bontius*, who treats only of animals belonging to the ſouth of Aſia, engrave the American coendou under the name of the true porcupine; ſo that, at firſt ſight, we would be tempted to think that this animal exiſted equally in America and in Aſia. With a little attention, however, it is eaſy to perceive, that Piſo, who, in this article, as well as in moſt parts of his work, is but the plagiary of Marcgrave, has not

Hyſtrix cauda longiſſima, tenui, medietate extrema aculeorum experte; *Briſſon. Quad. p.* 87.

Hyſtrix longius caudatus, brevioribus aculeis; *Barrère, Franc. Equin. p.* 153.

Cuandu, *Braſilienſibus, Luſitanis.*

Chat épineux; *Deſmarchais, tom.* iii. *p.* 303.

* Jac. Bontii, Hiſt. Indiæ Orient. p. 54.

only

only copied Marcgrave's figure of the coendou into his hiſtory of Braſil, but likewiſe engraved it again for Bontius's work, which he digeſted and publiſhed. Hence, though we have the figure of the coendou in Bontius, we muſt not conclude that it exiſts in Java, or in any other part of the Eaſt Indies, nor take this figure for that of the porcupine, between which and the coendou there is no ſimilarity, except that both have quills or ſpines.

It is to Ximenes, and afterwards to Hernandez, that we owe our firſt knowledge of this animal, which they have pointed out under the Mexican name of *Hoitztlacuatzin:* The *tlacuatzin* is the opoſſum; and *hoitztlacuatzin* ſhould be tranſlated the *briſtly* or *ſpinous opoſſum.* This denomination has been ill applied; for theſe animals have very little reſemblance. Marcgrave has not adopted this Mexican name, but calls the animal by its Braſilian name, *cuandu.* Marcgrave, however, ought to have perceived, that his Braſilian cuandu was the ſame animal with the hoitztlacuatzin of Mexico, eſpecially as his figure and deſcription correſpond very well with thoſe of Hernandez; and as Laët, the editor and commentator of Marcgrave, ſays, in expreſs terms *, that the ſpinous tlacuatzin of Ximenes,

* Videtur eſſe idem animal aut ſaltem ſimile quod Fr. Ximenès deſcribit ſub nomine Tlaquatzin ſpinoſi. *De Laët, Annotatio in cap.* ix. *lib.* vi. *Marcgrave, p.* 233.

and

and the cuanda, are probably the ſame animal. From the few notices to be collected from travellers, it appears that there are two varieties of theſe animals, which the naturaliſts have copied from Piſo* into their catalogues, as two diſtinct ſpecies, namely, the great and the ſmall cuandu †. But the error, or the negligence of Piſo, is apparent; for though he gives theſe coendous in two ſeparate articles, and ſeems to regard them as diſtinct ſpecies, he repreſents both by the ſame figure: Hence we are entitled to pronounce them to be the ſame animal. There are alſo ſome naturaliſts who not only make two ſpecies of the great and ſmall coendou, but have ſeparated them from the hoitztlacuatzin, and given the whole three as different animals: I acknowledge, indeed, that, though the coendou and hoitztlacuatzin are probably the ſame animal, their identity is not ſo certain as that of the great and ſmall coendou.

* Cuandu major; *Piſon. Hiſt. Braſ. pag.* 324. *fig. pag.* 325. Cuandu ſeu cuandu minor; *Piſon. Id. pag.* 99. *fig. ibid.*

† Hyſtrix longius caudatus, brevioribus aculeis; *Barrère, Hiſt. Nat. de la Fr. Equinox. Porc-epic, pag.* 153.——Hyſtrix minor; *Leucopheus, Gouandou; id. ibid.*

Hyſtrix cauda longiſſima tenui, medietate extrema aculeorum experte. Hyſtrix Americanus major; *Le Grand Porc-epic d'Amerique; Briſſ. Regn. Anim. pag.* 130.——Hyſtrix cauda longiſſima, tenui medietate extrema aculeorum experte. Hyſtrix Americanus; *Le Porc-epic d'Amerique. Id. pag.* 129. Hyſtrix aculeis apparentibus, cauda brevi et craſſa. Hyſtrix novæ Hiſpaniæ. *Le Porc-epic de la Nouvelle Eſpagne. Id. pag.* 127.

However this matter ſtands, the coendou is not the porcupine. The former is much ſmaller. His head and muzzle are proportionally ſhorter. He has no plume or creſt on his head, and his upper-lip is not divided. He has a long tail; but that of the porcupine is very ſhort. He is rather a carnivorous than a frugivorous animal; for he endeavours to ſurpriſe birds, ſmall quadrupeds, and poultry *, while the porcupine lives upon pot-herbs, roots, and fruit. Like the hedge-hog, he ſleeps during the day, and moves about in the night. He climbs trees †, and ſuſpends himſelf by the tail upon the branches. He may be tamed. He commonly lives in elevated places ‡; and he is found through the whole continent of America, from Braſil and Guiana, as far as Louiſiana, and the ſouthern

* This fact, which is aſſerted by Marcgrave and Piſo, is not certain; for Hernandez, on the contrary, ſays, that the hoitztlacuatzin feeds upon fruits.

† Scandit arbores ſed tardo greſſu, quia pollice caret; deſcendens autem caudam circumvolvit ne labatur, admodum enim metuit lapſum, nec ſalire poteſt; *Marcgrav. Hiſt. Nat. Braſ. p.* 233. ——— We ſpied a porcupine upon a ſmall tree, which we cut down for the pleaſure of ſeeing the animal fall. —— He is very fat, and the natives eat his fleſh; *Voyage de la Hontan, tom.* i. *p.* 82.

‡ Carnem habet bonam et pergratam; nam aſſatam ſæpe comedi, et ab incolis valde æſtimatur; *Marcgrav. p.* 233.—His fleſh is very good, and it is ſcalded, like that of the hog. But the ſavage women previouſly pull off all the quills from his back, of which they make various trinkets. ——— After being ſcalded, waſhed, and roaſted on a ſpit, it is of equal value with a pig; *Deſcript. de l'Amerique par Denis, tom.* ii. *p.* 324.

parts

parts of Canada. But the porcupine is confined to the warm regions of the Old Continent.

By conferring the name of porcupine upon the coendou, the ſame powers have alſo been aſcribed to him, particularly that of ſhooting his quills. It is aſtoniſhing, that naturaliſts and voyagers ſhould agree in this fact, and that Piſo, who ought to have been leſs ſuperſtitious, becauſe he was a phyſician, ſhould gravely tell us, that the quills of the coendou pierce the fleſh by their own proper force, and penetrate into the bowels of an animal. Though theſe facts be evidently abſurd, Ray is the firſt author who denied them. But how many abſurdities have been expoſed by men of ſenſe, which are ſtill daily affirmed by other men who believe they poſſeſs a greater portion of underſtanding?

SUPPLEMENT.

IN Guiana there are two ſpecies of Coendous. The largeſt weighs from twelve to fifteen pounds. They keep always on the higheſt trees. They eat none during the day. Their odour is very ſtrong, and felt at a great diſtance. The females bring forth their young, to the number of two, in the holes of trees. They feed on the leaves of theſe trees, and are not very common.

Their fleſh is extremely good; and the negroes prefer it to that of the paca. According to M. de la Borde, the two ſpecies never mix. They are never found in pairs, except in the ſeaſon of love. At other times, they are ſolitary; and the females never quit the tree in which they have brought forth. Theſe animals are apt to bite; but their bite is neither ſtrong nor dangerous.

The individuals of the ſmall ſpecies weigh about ſix pounds. They are not more numerous than the others. The tigers are deadly foes to the coendous; and they never appear on the ground during the day.

Plate CCX.

A. Bell Sculp.t

COENDOU

The CANADA PORCUPINE*.

THIS animal has never received a proper name. Placed by Nature in the desert regions of North America, it enjoys an independent existence, remote from man, from whom it has obtained no denomination, which is the first badge of his empire. Hudson having discovered the land which it inhabits, we

* The Canada porcupine has short ears, hid in the fur. The head, body, legs, and upper part of the tail, are covered with soft, long, dark brown hair. On the upper part of the head, back, body, and tail, there are numbers of sharp, strong quills. The longest are on the back, the least towards the head and sides. The longest are three inches; but all are hid in the hair. Intermixed are some stiff straggling hairs, three inches longer than the rest, and tipt with dirty white. The under side of the tail is white. There are four toes on the fore feet, five behind, each armed with long claws, hollowed on their under side. The form of the body is exactly that of the beaver, but is not half the size. One which Mr. Banks brought from Newfoundland was about the size of a hare, but more compactly made. The tail was about six inches long; *Pennant's Synopf. of Quad. p.* 266.

The porcupine from Hudson's Bay; *Edw. Hist. of Birds, p.* 52. *Ellis's Voyag. p.* 42. *Clerk's Voyag. vol.* i. *p.* 177. 191.

Cavia Hudsonis; *Klein. Quad. p.* 51.

Hystrix aculeis sub pilis occultis, cauda brevi et crassa; *Brisson. Quad. p.* 87.

Hystrix dorsata, palmis tetradactylis, plantis pentadactylis, cauda mediocri, dorso solo spinoso; *Linn. Syst. Nat. p.* 76.

L'Urson; *Buffon.*

ſhall give it a name which recalls that of its firſt maſter, and indicates, at the ſame time, its poignant and briſtly nature. Beſides, it was neceſſary to beſtow a name upon it, to prevent its being confounded with the porcupine, or the coendou, which it reſembles in ſome characters, but differs ſo widely from them in all others, that it ought to be regarded as a particular ſpecies. It likewiſe belongs to a northern climate, while the other two are natives of the ſouth.

Edwards, Ellis, and Cateſby, have all mentioned this animal. The figures given by the two firſt authors correſpond with ours; and we doubt not but they are the ſame ſpecies. We are even tempted to believe, that the animal deſcribed and engraved by Seba *, under the name of *a ſingular Eaſt India porcupine*, and which was afterwards pointed out by Klein †, Briſſon ‡, and Linnæus ‖, in their methodical catalogues, by the characters given by Seba, might be the ſame with the animal under queſtion. This would not, as formerly remarked, be the only time that Seba has exhibited American animals as belonging to the Eaſt Indies. We cannot,

* Porcus aculeatus ſylveſtris, ſive Hyſtrix orientalis ſingularis; *Seba, vol.* i. *p.* 84. *tab.* 52. *fig.* 1.

† Acanthion cauda prolonga acutis pilis horrida, in exitu quaſi panniculata; *Klein de Quad. p.* 67.

‡ Hyſtrix cauda longiſſima, aculeis undique obſita, in extremo panniculata. Hyſtrix Orientalis. The Indian porcupine; *Briſſon. Regn. Anim. p.* 131.

‖ Hyſtrix macroura, pedibus pentadactylis, cauda longiſſima, aculeis clavatis; *Linn. Syſt. Nat. p.* 77.

however,

Plate CCXL.

A.Bell Sculpt.

URSON.

however, be ſo certain with regard to this animal as we have been with ſeveral others. We ſhall only ſay, that the reſemblances appear to be very great, and the differences but ſlight; and that, as theſe animals are little known, the differences may be only individual varieties, or thoſe which diſtinguiſh males and females.

The Canada porcupine might be called the *briſtly beaver*. It is a native of the ſame country, is of the ſame ſize, and has nearly the ſame figure. Like the beaver, it has two long, ſharp, and ſtrong cutting teeth in each jaw. Independent of its quills, which are ſhort, and almoſt concealed among the hair, it has, like the beaver, a double fur, the firſt conſiſting of long ſoft hairs, and the ſecond of a down ſtill more ſoft. When the animal is young, the quills are proportionally larger, and more apparent, and the hairs are ſhorter and thinner than in the adults.

This animal avoids all kinds of moiſture. He retires and depoſits his excrements under the roots of hollow trees *. He ſleeps much, and feeds chiefly on the bark of the juniper buſhes. In winter, the ſnow ſerves him for drink; and, in ſummer, he drinks water, which he laps like a dog. The ſavages eat his fleſh, and clothe themſelves with his fur, after depriving it of the quills and briſtles.

* See Edwards, Hiſt. of Birds, p. 52.

The TANREC and the TENDRAC, or ASIATIC HEDGEHOG *.

THE *Tanrecs* or *Tendracs* are ſmall Eaſt Indian animals which have ſome reſemblance to our hedgehog, but differ ſo much from it as to conſtitute a diſtinct ſpecies. This is apparent,

* The *Tendrac*, or Aſiatic hedgehog, with a long ſlender noſe, ſhort rounded ears, and ſhort legs. The upper part of the body is covered with ſhort ſpines, white, and marked croſs the middle with ruſt colour. The face, throat, belly, buttocks, and legs, are thinly covered with whitiſh, fine, but hard hair. The tail is very ſhort, and covered with ſpines. About the noſe there are ſome hairs above two inches long. It is of the ſize of a mole.

The other, or the *Tanrec*, is rather larger. It is covered with ſpines only on the top and hind part of the head, the top and ſides of the neck, and the ſhoulders; the longeſt were on the upper part of the neck, and ſtood erect. The reſt of the body was covered with yellowiſh briſtles, among which were intermixed ſome that were black, and much longer than the others. Each of theſe animals, which are varieties of the ſame ſpecies, had five toes on each foot; *Pennant's Synopſ. of Quad. p.* 317.

Erinaceus Americanus albus; *Seba, tom.* i. *p.* 78. *tab.* 49. *fig.* 3.——This hedgehog, which Seba ſays was ſent to him from Amboyna, has ſo ſtrong a reſemblance to the tendrac, that it muſt be the ſame animal; and, if it is a native of Madagaſcar, it ought not to be found in America. With regard to this animal, Seba is wrong in every article; for it neither belongs to America, nor is it white, but only leſs brown than our European hedgehog.

independent

independent of inſpection or compariſon; for they never roll themſelves up into a ball, like the hedgehog; and beſides, the tanrecs are found in Madagaſcar, where there are alſo hedgehogs of the ſame kind with ours, which bear not the name of *tanrec*, but are called *Sora* *.

There ſeems to be two ſpecies, or perhaps two races of tanrecs: The firſt, which is nearly as large as our hedgehog, has a muzzle proportionally longer than the ſecond; its ears are alſo more apparent, and it has fewer briſtles than the other, to which we have given the name of *Tendrac*, to diſtinguiſh it from the firſt. This tendrac is not larger than a large rat. Its muzzle and ears are ſhorter than thoſe of the tanrec, which laſt is covered with ſmaller briſtles, but equally numerous with thoſe of the hedgehog. The tendrac, on the contrary, has no ſpines but on the head, the neck, and the withers, the reſt of the body being covered with coarſe hair, like hogs briſtles.

Theſe ſmall animals, which have ſhort legs, move very ſlowly. They grunt and wallow in the mire like hogs †. They are fond of water, in which they dwell longer than upon land. They are caught in ſalt water, in canals, and in ſmall gulfs of the ſea. They are very ardent

* Voyage a Madagaſcar, par Flacourt, p. 152.

† Recueil des Voyages qui ont ſervir à l'Etabliſſement de la Compagnie des Indes de Hollande, tom. i. p. 412.

in their amours, and multiply greatly *. They dig holes in the ground, into which they retire, and lie in a torpid ſtate during ſeveral months. In this ſtate, their hair falls off, which grows again after they awake. They are generally very fat; and, though their fleſh be inſipid and reedy, the Indians eat it with pleaſure.

* Relation de Fr. Cauche, p. 127.——Voyages de la Compagnie des Indes de Hollande, p. 412.

Plate CCXII.

A. Bell, Sculp.

TANREC.

Plate CCXIII.

A. Bell sculpt.

TENDRAC.

SECOND VIEW OF NATURE.

INDIVIDUALS, whatever their kind or number may be, are of no value in the univerſe. Species are the only exiſtences in Nature; for they are equally ancient and permanent with herſelf. To form a diſtinct idea of this ſubject, we ſhall not conſider ſpecies as a collection or ſucceſſion of ſimilar individuals, but as a whole, independent of number and of time, always active and always the ſame; a whole, which has been reckoned one in the works of creation, and, therefore, conſtitutes only a unit in Nature. Of all theſe units, the human ſpecies holds the firſt rank: The others, from the elephant to the mite, from the cedar to the hyſſop, are in the ſecond and third orders. Though different in form, in ſubſtance, and even in life, each retains its proper place, ſubſiſts by itſelf, defends itſelf againſt the others, and the whole together repreſent animated Nature, who ſupports, and will continue to ſupport herſelf in the ſame manner as we now behold her. A day, a year, an age, or any given portion of time, conſtitutes no part of her duration. Time itſelf relates only to individuals, to beings whoſe exiſtence is fugitive. But the exiſtence of ſpecies is conſtant; their permanence produces duration, and their diffe-

rences give rise to number. Let us consider species in this light; let us give to each an equal right to the indulgence and support of Nature. To her they are all equally dear; for, on each of them, she has bestowed the means of subsisting, and of lasting as long as herself.

Let us now suppose the species to change places with the individual. We have already seen what Nature is in relation to man; let us next consider in what light she would appear to a being who represented the whole human species. In the spring, the verdure of the fields revives, the buds and flowers expand, the bees recover from their torpid state, the swallow returns to our land, the nightingale chants the song of love, the ram frisks, the bull lows with desire, and all animated creatures are eager to join and to multiply their species; we have then no idea but that of reproduction and the increase of life. On the other hand, when the dark season of cold and frost approaches, animated beings become indifferent, and even avoid each other; the inhabitants of the air desert our climates, those of the water lose their freedom under vaults of ice; many animals grow torpid, and dig retreats for themselves in the ground; the earth hardens, the plants wither; and the trees, deprived of their foliage, bend under loads of snow and hoar-frost; every object excites the idea of languor and annihilation. But these ideas of renovation and destruction, or rather

theſe images of death and life, however great and general they appear, are only individual and particular. Man, as an individual, thinks in this manner: But the being whom we have ſubſtituted for the ſpecies, thinks and judges in a manner more ſublime and general. In this alternate deſtruction and renovation, in all theſe ſucceſſive viciſſitudes, he perceives only permanence and duration. The ſeaſon of one year is to him the ſame as that of the preceding, the ſame as that of millions of ages. The thouſandth animal, in the order of generation, is the ſame to him as the firſt. In fine, if man lived for ever, if all the beings which ſurround him exiſted in the ſame manner as they do at preſent, the idea of time would vaniſh, and the individual would become the ſpecies.

Why ſhould we not conſider Nature for a few moments, under this new aſpect? In truth, man comes into this world enveloped in darkneſs. The mind being equally naked with the body, he is born without knowledge and without defence. He brings nothing with him but paſſive qualities. He is obliged to receive the impreſſions of objects on his organs; the light ſhines long on his eyes before he can recogniſe it. At firſt, he receives every thing from Nature, and makes her no returns. But, as ſoon as his ſenſes have acquired ſtrength and activity, as ſoon as he can compare his ſenſations, he reflects upon the univerſe; he forms ideas, and retains,

retains, extends, and combines them. Man, especially when he has been instructed, is not a simple individual: He represents, in a great measure, the whole human species: He begins with receiving from his parents the knowledge which had been transmitted to them from their fathers: Thus, by means of the divine arts of writing and printing, the present age is, in some measure, identified with those that are past. This accumulation, in one man, of the experience of many centuries, extends the limits of his being to infinity. He is no more than a simple individual, born, like other animals, with the capacity of attending to present sensations alone: He is nearly the being we supposed to represent the whole species. He reads what is past, sees the present, and judges of the future; and, in the torrent of time, which carries off and absorbs all the individuals of the universe, he perceives that the species are permanent, and Nature invariable. The relations of objects being always the same, to him the order of time appears to be nothing. In his eyes, the laws of renovation only counterbalance those of permanence. A continual succession of similar beings is, in effect, equivalent only to the perpetual existence of one of these beings.

What purposes, then, are served by this vast train of generations, this immense profusion of germs, many thousands of which are abortive for one that succeeds? Does not this perpetual propagation

propagation of beings, which are inceſſantly deſtroyed and renewed, uniformly exhibit the ſame ſcene, and occupy neither more nor leſs of Nature? From whence proceed thoſe alterations of life and death, thoſe laws of growth and decay, all thoſe individual viciſſitudes, and all thoſe reiterated repreſentations of one and the ſame thing? They are derived from the very eſſence of Nature, and depend on the firſt eſtabliſhment of the univerſal machine; the whole of which is fixed and ſtable; but each of its parts being capable of motion, the general movements of the celeſtial bodies have produced the particular motions of this terreſtrial globe. The penetrating forces by which theſe immenſe bodies are animated, by which they act reciprocally upon each other at a diſtance, animate at the ſame time every particle of matter; and this mutual propenſity of all the parts toward each other, is the firſt bond of beings, the principle of conſiſtence and permanency in Nature, and the ſupport of harmony in the univerſe. The great combinations give riſe to the ſmaller relations: The motion of the earth on its own axis having divided the portions of duration into day and night, all its animated inhabitants have their times of light and of darkneſs, of waking and ſleeping. The action of the ſenſes, and the motions of the members, which conſtitute a great part of the animal œconomy, are related to this firſt combination. Would there be ſenſes alive

to

to light in a world where perpetual darkneſs reigned?

The inclination of the axis of the earth producing, in its annual motion round the ſun, conſiderable changes of heat and cold, which we call *ſeaſons*, all vegetables havé alſo, either totally or partially, their ſeaſons of life and of death. The fall of the leaves and fruits, the withering of herbs, and the deſtruction of inſects, depend entirely on this ſecond combination. In climates where it does not take place, the life of vegetables is never ſuſpended, and every inſect completes its peculiar period of exiſtence. Under the line, where the four ſeaſons make but one, the earth is always covered with flowers, the trees are in perpetual verdure, and Nature enjoys a continual ſpring.

The particular conſtitution of animals and of plants is relative to the general temperature of the earth, and this temperature depends on the ſituation or diſtance of the earth from the ſun. If removed to a greater diſtance, our animals and plants could neither live nor vegetate. The water, the ſap, the blood, all the liquors, would loſe their fluidity: At a ſmaller diſtance, they would vaniſh and diſſipate in vapour. Ice and fire are the elements of death; temperate heat is the firſt germ of life.

The living particles diffuſed through organized bodies are related, both by their activity and number, to the particles of light, which ſtrike and

and penetrate all matter with their heat. Wherever the rays of the ſun can heat the earth, its ſurface is covered with verdure, and peopled with animals. Even ice itſelf, as ſoon as it diſſolves into water, ſeems to be fecundated. This element is more fertile than that of the earth: From heat it receives motion and life. The ſea produces, every ſeaſon, more animals than the earth ſuſtains: But it produces fewer vegetables. Hence all the animals which inhabit the ocean, by not having, like thoſe on the land, a permanent ſtock of vegetable ſubſtances to ſupport them, are under the neceſſity of feeding upon each other; and to this combination their immenſe multiplication is to be referred.

Every ſpecies having been originally created, the firſt individuals ſerved as a model to their deſcendants. The body of each animal or vegetable is a mould, to which are aſſimilated indifferently the organic particles of all animals or vegetables which have been deſtroyed by death or conſumed by time. The brute particles, which formed part of their compoſition, return to the common maſs of inanimated matter. But the organic particles, whoſe duration is permanent, are reſumed by organized bodies: They are firſt extracted from the earth by vegetables, then abſorbed by animals which feed upon vegetables, and thus ſerve for the expanſion, ſupport, and growth of both. By circulating perpetually from body to body, they animate all organized

organized beings. The ſtock of theſe living ſubſtances is always the ſame. They vary only in form, or in difference of appearance. In fertile ages, during the times of the greateſt population, the whole ſurface of the earth ſeems to be covered with men, domeſtic animals, and uſeful plants. But, during the period of famine and depopulation, the ferocious animals, noxious inſects, paraſitical plants, and uſeleſs herbs, reſume, in their turn, dominion over the earth. Theſe changes, ſo ſenſible to man, are perfectly indifferent to Nature: The ſilk-worm, ſo precious to us, is to her only the caterpillar of the mulberry tree. Though this caterpillar, which miniſters to our luxury, ſhould diſappear, though the plants which nouriſh our domeſtic animals ſhould be devoured by other caterpillars, though others ſhould threaten with deſtruction the ſubſtance of our corns before the harveſt, in fine, though man and the larger animals ſhould be ſtarved by the inferior tribes, Nature would not be leſs full, nor leſs alive. She protects not one at the expence of another; ſhe equally ſupports the whole. But, with regard to individuals, ſhe knows not number, and views them only as ſucceſſive images of the ſame impreſſion, as fugitive ſhadows, of which the ſpecies is the ſubſtance.

There exiſts, therefore, in the earth, air, and waters, a determined quantity of organic matter which nothing can deſtroy, and, at the ſame time, a determined number of moulds capable of

of aſſimilating it; and theſe moulds are perpetually annihilated and renewed. This number of moulds, or individuals, though variable in every ſpecies, is, upon the whole, always the ſame, always proportioned to the quantity of living matter. If this matter were redundant, if it were not at all times equally occupied, and entirely abſorbed by the moulds which already exiſt, it would form others, and produce new ſpecies. Being alive, it never remains without action; and its union with brute matter is ſufficient to conſtitute organized bodies. It is to this great combination, or rather to this invariable proportion, that Nature owes her form and conſiſtence.

As the laws of Nature, regarding the number, ſupport, and equilibrium, of the ſpecies, are fixed and permanent, ſhe would uniformly exhibit the ſame appearances, and, in all climates and times, would be abſolutely and relatively the ſame, if her complexion did not vary almoſt infinitely in individual forms. The impreſſion of each ſpecies is a figure, the principal features of which are engraven in characters which can never be effaced. But all the acceſſory ſhades and touches are greatly diverſified; no individual has a perfect reſemblance to another; no ſpecies exiſts without a number of varieties. In the human ſpecies, which bears the ſtrongeſt marks of divinity, the impreſſion varies from white to black, from ſmall to great, &c. The

Laplander, the Patagonian, the Hottentot, the European, the American, and the Negro, though ſprung from the ſame parents, have by no means the ſimilarity of brothers.

All ſpecies, therefore, are ſubject to individual differences: But the conſtant varieties, which are perpetuated through ſucceſſive generations, belong not equally to every ſpecies. The more dignified the ſpecies, its figure is the more fixed, and admits of fewer varieties. The multiplication of animals being inverſely proportional to their magnitude, and the poſſibility of differences being in the direct proportion to the numbers they produce, there muſt neceſſarily be more varieties among the ſmall than the large animals, and, for the ſame reaſon, a greater number of ſpecies which make a near approach to each other. In large animals, the unity of the ſpecies is more fixed, and the diſtance which ſeparates them is alſo more extended. How many varieties and neighbouring ſpecies accompany, follow, or precede the ſquirrel, the rat, and other ſmall quadrupeds, while the majeſtic elephant walks alone, and without a peer, at the head of the whole!

The brute matter, of which the maſs of the earth is compoſed, is a virgin or untouched ſubſtance, that has undergone no alterations. But the whole has been more than once put in motion, and diſturbed by the hand of Nature. The globe of the earth has been penetrated by fire, and

and afterwards covered and diſordered by water. The ſand which fills the interior parts of the earth is a vitrified matter. The thick beds of clay which cover its ſurface, are only the ſame ſand decompoſed by the operation of the waters. Granite, free-ſtone, flint, and all the metals, are nothing but this ſame vitrified matter, the particles of which are united, condenſed, or ſeparated, according to the laws of their affinity. All theſe ſubſtances are perfectly inanimate: They exiſt, and will continue to exiſt, independent of animals and vegetables. But there are many other ſubſtances, which, though they appear to be equally inanimate, derive their origin from organized bodies: Marble, limeſtone, chalk, and marl, are compoſed of the ſpoils of ſhells, and of thoſe ſmall animals which, by tranſforming the water of the ſea into ſtone, produce coral, and all the madrepores, the varieties of which are numberleſs, and the quantity aſmoſt immenſe. Pit-coal, turf, and other ſubſtances, alſo found in the ſuperior ſtrata of the earth, are nothing but the reſidue of vegetables more or leſs corrupted and conſumed. In fine, there are other ſubſtances, though fewer in number, ſuch as pumice-ſtones, ſulphur, the ſcoriæ of iron, aſbeſtos, and lava, which have been thrown out by volcanoes, and produced by a ſecond action of fire upon the original matters. To theſe three great combinations may be re-

ferred all the relations of brute matter, and all the ſubſtances of the mineral kingdom.

The laws of affinity, by which the conſtituent particles of theſe different ſubſtances ſeparate from each other, in order to unite among themſelves, and form homogeneous maſſes, are the ſame with that general law by which the celeſtial bodies act upon one another. Their exertions are mutual, and proportioned to their maſſes and diſtances. Globules of water, of ſand, or of metal, act upon each other in the ſame manner as the earth acts upon the moon: And, if theſe laws of affinity have hitherto been regarded as different from thoſe of gravity, it muſt be aſcribed to the confined views we have taken of the ſubject. Figure, which, in the celeſtial bodies, has almoſt no effect upon their mutual action, becauſe the diſtance is immenſe, has great influence when the diſtance is very ſmall. If the earth and moon, inſtead of a ſpherical figure, were both ſhort cylinders, and equal throughout in their diameters, their reciprocal action would not be ſenſibly altered by this difference of figure, becauſe the diſtance of all the parts of the moon from thoſe of the earth would be very little changed. But, if theſe ſame globes were cylinders of great extent, and placed near each other, the law of their reciprocal action would appear to be very different; becauſe the relative diſtances of their parts would be greatly varied. Hence, whenever figure becomes a principle in diſtance,

diſtance, the law ſeems to vary, though, in fact, it remains always the ſame.

From this principle, the human intellect may advance one ſtep farther, and penetrate deeper into the operations of Nature. We are ignorant of the figure of the conſtituent particles of bodies. Water, air, earth, metals, and all homogeneous ſubſtances, are unqueſtionably compoſed of elementary particles, which are ſimilar among themſelves, but whoſe figure is unknown. Poſterity, by the aid of calculation, may diſcloſe this new field of knowledge, and aſcertain, with conſiderable preciſion, the figure of the elements of bodies. They will take the principle we have eſtabliſhed as the baſis of their reaſoning: *All matter is attracted in the inverſe ratio of the ſquare of the diſtance; and this law ſeems to admit of no variation in particular attractions, but what ariſes from the figure of the conſtituent particles of each ſubſtance; becauſe this figure enters as an element or principle into the diſtance.* Hence, when they diſcover, by reiterated experiments, the law of attraction in any particular ſubſtance, they may find, by calculation, the figure of its conſtituent particles. To make this matter more clear, let us ſuppoſe, that, by placing mercury on a perfectly poliſhed ſurface, we find, by experiment, that this fluid metal is always attracted in the inverſe ratio of the cube of the diſtance, we muſt inveſtigate, by the rules of falſe poſition, what figure gives this expreſſion; and this

figure will be that of the conſtituent particles of mercury. If, from theſe experiments, it appeared that the attraction of mercury was in the inverſe ratio of the ſquare of the diſtance, it would be demonſtrated that its conſtituent particles are ſpherical; becauſe a ſphere is the only figure which obſerves this law, and, at whatever diſtance globes are placed, the law of their attraction is always the ſame.

Newton conjectured, that chemical affinities, which are nothing but the particular attractions we have mentioned, were produced by laws ſimilar to thoſe of gravitation. But he ſeems not to have perceived, that all theſe particular laws were only ſimple modifications of the general law, and that they appeared to be different, only becauſe, at very ſmall diſtances, the figure of atoms which attract each other has a greater influence upon the expreſſion of this law, than the maſs of matter.

Upon this theory, however, the intimate knowledge of the compoſition of brute matter ſolely depends. The baſis of all matter is the ſame; and the form of it would likewiſe be the ſame, if the figure of its conſtituent particles were perfectly ſimilar. One homogeneous ſubſtance cannot differ from another, but in proportion to the difference of the figures of their primitive particles. A body, of which all the particles are ſpherical, ought to be one half ſpecifically lighter than another whoſe particles

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are cubical; becauſe the firſt, by touching each other only in points, leave intervals equal to the ſpaces they occupy, while the cubical particles unite without leaving the ſmalleſt void, and, conſequently, form a matter one half heavier than the firſt. Though figures may be infinitely varied, they ſeem not to be ſo numerous in Nature as might be imagined; for ſhe has fixed the limits of gravity and levity. Gold and air are the two extremes of denſity. All the figures admitted by Nature, therefore, are comprehended between theſe two terms; and all thoſe which would have produced heavier or lighter ſubſtances have been rejected.

When I ſpeak of figures employed by Nature, I mean not that they are neceſſarily, or even exactly, ſimilar to thoſe geometrical figures which exiſt in our imagination. We make laws by ſuppoſition, and we render them ſimple by abſtraction. There are, perhaps, neither exact cubes, nor perfect ſpheres in the univerſe. But, as nothing exiſts without form, and as, according to the diverſity of ſubſtances, the figures of the elements are different, ſome of them muſt neceſſarily approach to the ſphere, the cube, and all the other regular figures which we have conceived. The preciſe, the abſolute, the abſtract, which ſo often preſent themſelves to our minds, can have no real exiſtence, becauſe all objects are related, differ only by almoſt imperceptible ſhades, and are allied by proximation. In

the ſame manner, when I mention one ſubſtance as being entirely full, becauſe it is compoſed of cubical particles, and another of being only half full, becauſe its conſtituent particles are ſpherical, I ſpeak only comparatively, and mean not that ſuch ſubſtances really exiſt; for we know from experience, that, in tranſparent bodies, ſuch as glaſs, which is both denſe and heavy, the quantity of matter is very ſmall in proportion to the extent of the intervals; and it might be demonſtrated, that gold, which is the denſeſt ſpecies of matter, contains more vacuities than ſubſtance.

The conſideration of the powers of Nature is the object of rational mechanics; that of ſenſible mechanics is only a combination of particular powers, and is reduced to the art of conſtructing machines. Neceſſity and convenience have at all times inſured the culture of this art. The ancients excelled in it as well as the moderns. But rational mechanics is a ſcience invented in our days. All philoſophers, from Ariſtotle to Deſcartes, have reaſoned like the vulgar upon the nature of motion. They have uniformly miſtaken the effect for the cauſe. They knew no force but that of impulſion, to which they attributed the effects of other forces, and referred to it all the phænomena of the univerſe. If the notion had been plauſible, or even poſſible, this impulſion, which they regarded as the ſole cauſe, muſt at leaſt have been a general effect, which equally belonged

belonged to all matter, and which continually exerted itſelf in all places, and at all times. The oppoſite was daily demonſtrated to them. Did they not perceive, that, in bodies at reſt, this force had no exiſtence; that, in projected bodies, it ſubſiſted but a ſhort time, and was ſoon deſtroyed by reſiſtance; that, to renew it, a freſh impulſe was neceſſary; and that, conſequently, ſo far from being a general cauſe, it was only a particular effect, produced by more general effects?

Now, a general effect is what ought to be called a cauſe; for the real cauſe of this effect can never be known to us; becauſe all our knowledge is derived from compariſon; and an effect being ſuppoſed general, and belonging equally to all matter, we can compare it to nothing, and, of courſe, can know it only by the fact. Hence attraction, or gravity, being a general effect common to all matter, and demonſtrated by the fact, it ought to be regarded as a cauſe, and to it ſhould be referred all other particular cauſes, and even that of impulſion, ſince it is leſs general and leſs conſtant. The difficulty is to perceive how impulſion can be an effect of attraction. If we reflect on the communication of motion by impulſe, we will be perſuaded that it can only be tranſmitted from one body to another by elaſticity, and that all the hypotheſes concerning the communication

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of motion in hard bodies, are mere fancies, which have no exiſtence in Nature. A body perfectly hard or perfectly elaſtic, is a creature of imagination. Neither the one nor the other really exiſt; becauſe nothing exiſts abſolutely or in extreme, and the idea of perfection is only the abſolute or extreme of a thing.

If there was no elaſticity in matter, there could be no impulſive force. When we throw a ſtone, the motion which it acquires is communicated to it by the elaſticity of the arm. When a body in motion meets another at reſt, how can we conceive that the one ſhould communicate motion to the other in any other manner than by compreſſing the ſpring of the elaſtic particles it contains, which, by recovering itſelf immediately after compreſſion, gives to the whole maſs the ſame force that it received. We cannot comprehend how a perfectly hard body ſhould admit this force, or receive motion. Beſides, the inquiry is uſeleſs, as no ſuch body exiſts. All bodies, on the contrary, are endowed with elaſticity. Experiments on electricity prove that its force is elaſtic, and belongs to matter in general. Though, therefore, no other elaſticity exiſted in the interior parts of bodies but that of this electrical matter, it would be ſufficient for the communication of motion; and, conſequently, to this great ſpring, as a general effect, the particular cauſe of impulſion muſt be aſcribed.

Now,

Now, if we reflect upon the mechaniſm of elaſticity, we ſhall find, that its force depends on that of attraction. To obtain a clearer perception of this ſubject, let us ſuppoſe the moſt ſimple ſpring, a ſolid angle of iron, or of any other hard ſubſtance: What will be the reſult of compreſſing it? We oblige the parts adjacent to the top of the angle to bend, or to ſeparate a little from each other; and, the moment the preſſure is removed, they approach each other as formerly. Their adheſion, from which the coheſion of bodies reſults, is well known to be an effect of their mutual attraction. When the ſpring is preſſed, this adheſion is not deſtroyed; becauſe, though the particles are ſeparated, they are not ſo far removed from each other as to put them beyond their ſphere of mutual attraction. Of courſe, as ſoon as the preſſure ceaſes, this force is again exerted, the ſeparated parts approach, and their ſpring is reſtored. If, on the other hand, by a preſſure too violent, they are removed beyond the ſphere of their attraction, the ſpring breaks; becauſe the compreſſing force has been greater than that of coheſion, or than that of the mutual attraction which keeps the particles together. Hence elaſticity can exert itſelf only in proportion to the coheſion of the particles of matter, that is, in proportion as they are united by the force of their mutual attraction; and, conſequently, elaſticity in general, which alone can produce impulſion, and the impulſion itſelf,

are owing to the force of attraction, and depend on it as particular effects on a general effect.

However clear these ideas appear to me, I expect not to see them adopted. The people never reason but from their sensations; and natural philosophers judge from their prejudices. All these must, therefore, be set aside, and very few will remain to form a proper judgment. But this is the fate of Truth; she is content with a few admirers, and is always lost in a crowd: Though at all times august and majestic, she is often obscured by fantastic notions, or totally effaced by brilliant chimeras. This, however, is the manner in which I view and understand Nature; and perhaps she is still more simple: A single force is the cause of the phænomena exhibited by brute matter; and this force, when combined with that of heat, produces those living particles on which all the effects of organized bodies depend.

The GIRAFFE, or CAMELOPARD*.

THE camelopard is one of the moſt beautiful and largeſt quadrupeds: Without being noxious, he is at the ſame time extremely uſeleſs. The enormous diſproportion of his legs, of which thoſe before are double the length of thoſe behind, prevents him from exerciſing his powers. His body has no ſtability; he has a ſtaggering gait; and his movements are ſlow and conſtrained. When at liberty, he cannot eſcape from his enemies, nor can he ſerve man in

* The camelopard has ſhort ſtrait horns, covered with hair, truncated at the end, and tufted with hair. In the forehead, there is a tubercle about two inches high, reſembling a third horn. The height, from the crown of the head to the ſoles of the fore-feet, is ſeventeen feet, and that from the top of the rump to the bottom of the hind-feet, only nine: The length of the body is ſeven, and from the withers to the loins, only ſix feet. The fore-legs are not longer than the hind-legs; but the ſhoulders are of a vaſt length, which give the diſproportionate height between the fore and hind parts. The horns are ſix inches long. The head is like that of a ſtag. The neck is ſlender and elegant, and on the upper ſide there is a ſhort mane. The ears are large, and the tail long, with ſtrong hairs at the end. The colour of the whole animal is a dirty white, marked with large, broad, ruſty ſpots; *Pennant's Synopſ. of Quad.* p. 20.

Giraffe, a word derived from *Girnaffa*, *Siraphah*, *Zurnaba*, the name of this animal in the Arabian language, which has been

in a domeſtic ſtate. The ſpecies is not numerous, and has always been confined to the deſerts of Æthiopia, and to ſome provinces in the ſouth of Africa and India. As theſe countries were unknown to the Greeks, Ariſtotle has made no mention of this animal. Pliny ſpeaks of it, and Oppian deſcribes it in a manner which is by no means ambiguous *. The Camelopardalis, this

been adopted by the modern Europeans. *Camelopardalis* in Greek and Latin. Pliny gives the etymology of this compound name. 'Camelorum,' he remarks, 'aliqua ſimilitudo in aliud transfertur animal, *Nabin* Ethiopes vocant. Collo ſimilem equo, pedibus et cruribus bovi, camelo capite; albis maculis rutilum colorem diſtinguentibus, unde appellata *Camelopardalis:* Dictatoris Cæſaris Circenſibus ludis primum viſa Romæ; ex eo ſubinde cernitur, aſpectu magis quam feritate conſpicua: Quare etiam ovis feræ nomen invenit;' *Hiſt. Nat. lib.* viii. *cap.* 18.

La Giraffe, which the Arabs call *Zuraapa,*; *Belon. Obſ. p.* 118. *Leo Afric. p.* 337. *Geſner. Quad. p.* 160. *Raii Synopſ. Quad. p.* 90. *Briſſon. Quad. p.* 37.

Camelopardalis, Camelopardalin ſacræ litteræ vocant *Zamer. Deuter.* 14. Ubi Chaldaica tranſlatio habet *Deba*; Arabica, *Sarâphah*; Perſica *Seraphah*; Septuaginta *Camelopardalin*; *Hieronimus* Camelopardum; *Geſner. Hiſt. Quad. p.*147. *fig. p.* 149. ubi legitur Camelopardalus, icon ex charta quadem nuper impreſſa Norimbergæ —— *Surnapa* nomine altitudine ad ſummum verticem ſupra quinque orgyas, corniculis duobus ferrei coloris, pilo levi et compoſito pulchro; diligenter et probe depictum Conſtantinopoli et in Germaniam tranſmiſſum, anno 1559.

Camelopardalis; *Plin. lib.* viii. *c.* 18. *Dion Caſſius, lib.* xliii. *Præneſt. pavim. Shaw's Supplement, p.* 88. *Oppian. Cyneg. lib.* iii. *l.* 466. *Aldrov. de Quad. Biſulc. p.* 927. *fig. p.* 931. *Proſper Alpin. Hiſt. Egypt. tom.* ii. *p.* 236. *tab.* 14. *fig.* 4.

Tragus giraffa; *Klein. Quad. p.* 22.

Cervus camelopardalus, cornibus ſimpliciſſimis, pedibus anticis longiſſimis; *Linn. Syſt. Nat. p.* 92.

* Oppian. de Venat. lib. iii.

laſt

laſt author remarks, has ſome reſemblance to the camel. Its ſkin is ſpotted like that of the panther, and its neck is as long as that of the camel. Its head and ears are ſmall, its feet large, and its legs long, but unequal, thoſe before being much taller than thoſe behind, which are very ſhort, and ſeem to bring the rump of the animal down to the ground. Upon the head, near the ears, there are two eminences like two ſmall ſtraight horns. Its mouth reſembles that of the ſtag; the teeth are ſmall and white, the eyes brilliant, the tail ſhort, and garniſhed with black hairs at the point. By adding to this deſcription of Oppian thoſe of Heliodorus and Strabo, we ſhall have a pretty juſt idea of the camelopard. The Æthiopian ambaſſadors, ſays Heliodorus, brought an animal of the ſize of a camel, whoſe ſkin was marked with lively ſpots and brilliant colours, and whoſe poſterior parts were much lower than the anterior. The neck, though attached to a pretty large body, was thin, the head, in figure, reſembled that of the camel, and, in ſize, it was not twice as large as that of the oſtrich. The eyes appear to be tinged with different colours. The gait of this animal was different from that of all other quadrupeds, which in walking lift their feet diagonally, that is, the right fore foot with the left hind foot. But the camelopard ambles naturally, lifting the two right or the two left feet together. It is a gentle creature, and may be conducted

conducted at pleaſure by a ſmall cord put round its head *. There is, ſays Strabo, a large animal in Æthiopia, called *camelopardalis*, though it has no reſemblance to the panther; for its ſkin is not ſpotted in the ſame manner. The ſpots of the panther are circular, and thoſe of the camelopard reſemble the ſpots of the fawn or young ſtag. The poſterior parts of its body are much lower than the anterior; ſo that, at the rump, it is not higher than an ox, and at the ſhoulders it is higher than a camel. From this diſproportion of parts, its motions ſhould not be quick. It is a mild animal, does no miſchief, and feeds upon herbs and leaves †.

Belon is the firſt author who has given a good deſcription of the camelopard. 'I ſaw,' ſays he, 'at the caſtle of Cairo, an animal commonly 'called *Zurnapa*. It was formerly denominated '*Camelopardalis*, a name compounded of *leopard* 'and *camel;* for it is variegated with the ſpots of 'a leopard, and has a long neck, like the camel. 'It is a moſt beautiful creature, as gentle in its 'diſpoſitions as a ſheep, and more amiable than 'any other wild beaſt. Its head is nearly ſimilar 'to that of the ſtag, except in ſize. Its horns 'are blunt, ſix inches long, and covered with 'hair; thoſe of the male are longer than thoſe 'of the female. Both male and female have 'large ears, like thoſe of a cow, and a black

* Heliodorus, lib. x. † Strabo, lib. xvi. et xvii.

'tongue

'tongue reſembling that of an ox. It has no 'teeth in the upper jaw. The neck is long, 'ſtraight, and ſlender. The horns are round 'and delicate, the legs long and ſlender, and 'thoſe behind are ſo low, that the animal ſeems 'to ſtand on end. Its feet reſemble thoſe of an 'ox. Its tail, which hangs as low as the hock, 'is round, having hairs three times as groſs as 'thoſe of a horſe. The hair on the body is 'white and red. Its manner of running is 'ſimilar to that of the camel. When it runs, 'the two fore feet move together. It lies on its 'belly, and has hard protuberances on its breaſt 'and thighs, like the camel. When ſtanding, it 'cannot browſe the graſs, without ſpreading its 'fore feet very wide, and even then the opera-'tion is performed with great difficulty; for 'which reaſon it could not live in the fields, if 'it were not ſupplied with the leaves and ſprigs 'of trees *.'

The deſcription of Gillius is ſtill better than that of Belon. 'I ſaw, (ſays Gillius, chap. 9.) 'three giraffes at Cairo. They had two horns 'of ſix inches in length, and, on the middle of 'the front, a protuberance about two inches 'high, which reſembled a third horn. This 'animal, when he raiſes his head, is ſixteen feet 'high; the neck alone is ſeven feet; and the 'length, from the extremity of the tail to the end 'of the noſe, is twenty-two feet. The fore and

* Obſerv. de Belon, p. 118.

'hind legs are nearly of an equal height. But 'the fore thighs are so disproportionally long, 'that the back of the animal inclines like the 'roof of a house. The whole body is marked 'with large yellow spots, nearly of a square 'figure..... It has cloven feet like the ox. The 'upper lip protrudes beyond the under. The 'tail is slender, with hairs at the point. It ru-'minates and eats herbage, like the ox. Its mane 'extends from the top of the head along the 'back. When it walks, its legs and flanks on 'both sides seem to be alternately lame; and, 'when it brouses herbage or drinks, it is obliged 'to spread its fore legs prodigiously wide.'

Gesner quotes Belon for affirming that the horns of the giraffe fall off like those of the fallow deer*. I could never discover this fact in Belon. He only says, in the above passage, that the horns of the giraffe are covered with hair. He makes no other mention of this animal, except when treating of the axis, where he remarks, 'that the ground colour of the giraffe is white, 'and that the large spots scattered over the body 'are reddish, but not so red as those of the 'axis †.' This fact, however, which I can no where discover, would be of great importance in determining the nature of the giraffe; for, if its horns shed annually, it belongs to the deer kind; and, on the other hand, if its horns are perma-

* Giraffis et damis cornua cadunt; *Belon, Gesner, Hist. Quad.* p. 148. † Observ. de Belon, p. 120.

nent,

nent, it must be referred to the ox or goat kind. Until we obtain a distinct knowledge of this fact, we cannot affirm, as our nomenclators have done, that the giraffe belongs to the genus of stags; and it is astonishing that Hasselquist, who has lately given a very long and very inanimated description of this animal, has said nothing concerning its nature. After amassing methodically, that is, like a school-boy, a hundred minute and insignificant characters, he says not a syllable regarding the substance of the horns, and leaves us ignorant whether they are solid or hollow, whether they shed or not, whether, in a word, they are *wood* or horns. I here give Hasselquist's * description, not on account of its utility, but

* Cervus camelopardalis. Caput prominens, labium superius crassum, inferius tenue; nares oblongæ, amplæ; pili rigidi, sparsi in utroque labio anterius et ad latera. Supercilia rigida, distinctissima, serie una composita. Oculi ad latera capitis, vertici quam rostro, ut et fronti quam collo, propiores. Dentes, lingua cornua simplicissima, cylindrica, brevissima, basi crassa, in vertice capitis sita, pilosa basi pilis longissimis rigidis tecta, apice pilis longioribus erectis, rigidissimis, apicem longitudine superantibus, cincta. Apex cornuum in medio horum pilorum obtusus nudus. Eminentia in fronte, infra cornua, inferius oblonga humilior, superius elevatior, subrotunda, postice parum depressa, inæqualis. Auricula ad latera capitis infra cornua pone illa posita. Collum erectum, compressum, longissimum, versus caput angustissimum, inferius latiusculum. Crura cylindrica anterioribus plus quam dimidio longioribus. Tuburculum crassum, durum in genuflexum. Ungues bisulci, ungulati. Pili brevissimi universum corpus, caput, et pedes

 tegunt.

but of its ſingularity, and, at the ſame time, to perſuade travellers to uſe their own eyes, and not to view objects through the medium of other men's: It is neceſſary to caution them againſt ſuch methodical arrangements, the authors of which lay reaſon aſide, and believe themſelves wiſe in proportion to their want of genius. Have we advanced a ſingle ſtep, after fatiguing ourſelves with this enumeration of minute, equivocal, and uſeleſs characters? Do not the deſcriptions given by the ancients and moderns, in the paſſages above quoted, convey a more diſtinct picture, and clearer ideas of this animal? Figures ſupply all ſuch trifling characters; it is the province of hiſtory to mark thoſe which are more important: A ſingle glance of the eye upon a good figure conveys more information than

tegunt. Linea pilis rigidis longioribus per dorſum a capite ad caudam extenſa. Cauda teres, lumborum dimidia longitudine, non jubata. Color totius, corporis, capitis, ac pedum ex maculis fuſcis et ferrugineis variegatus. Maculæ palmari latitudine, figura irregulari, in vivo animali ex lucidiori et obſcuriore variantes. Magnitudo cameli minoris, longitudo totius a labio ſuperiore ad finem dorſi ſpith. 24. Longitudo capitis ſpith. 4, colli ſpith. 9 ad 10, pedum anter. ſpith. 11 ad 13, poſter. ſpith. 7 ad 8, longit. cornuum vix ſpithamalis. Spatium inter cornua ſpith. $\frac{1}{2}$, longit. pilorum in dorſo poll. 3, latitud. capitis juxta tuberculum vel eminentiam ſpith. $\frac{1}{2}$, prope maxillam ſpith. 1, colli utrinque prope caput ſpith. 1, in medio ſpith. $1\frac{1}{2}$, ad baſin ſpith. 2 ad 3, latitud. Lat. abd. anterius ſpith. 4, poſter. ſpith. 6 ad 7. Craſſities pellis aut corii cervi vulgaris. . . . Deſcriptio antecedens juxta pellem animalis farctam; animal vero nondum vidi; *Voyag. d'Haſſelquiſt, Roſtock* 1762.

deſcriptions

deſcriptions of this kind, which always become more obſcure in proportion to their minuteneſs.

In the year 1764, a drawing of the giraffe, accompanied with ſome remarks, was ſent to the academy of ſciences, from which we learn, that this animal, which was thought to be peculiar to Ethiopia *, is likewiſe found in the neighbourhood of the Cape of Good Hope. The figure is ſo incorrect, that no uſe can be made of it; but, as the remarks contain a kind of deſcription, they merit inſertion. 'In an expedi-'tion, made in the year 1702, two hundred 'leagues to the north of the Cape of Good Hope, 'we found the camelopardalis, whoſe figure we 'have ſubjoined. The body reſembles that of 'an ox, and the head and neck thoſe of a horſe. 'All thoſe we met with were white with brown 'ſpots. It has two horns, and cloven feet. The 'two we killed, and whoſe ſkins have been 'tranſmitted to Europe, were of the following 'dimenſions: The length of the head, one foot 'eight inches; the height, from the extremity 'of the fore-foot to the withers, ten feet, and 'from the withers to the top of the head, ſeven 'feet, in all ſeventeen feet high. The length,

* The giraffe is no where found but in Æthiopia. I ſaw two tame ones in the royal palace. I remarked, that, when they wanted to drink, they were obliged to ſpread the fore-legs very wide, otherwiſe, though their necks were long, they could not reach the water. What I relate, I ſaw with my eyes; *Relation de Thevenot, p.* 19.

'from the withers to the reins, is five feet ſix 'inches, and from the reins to the tail, one foot 'ſix inches: Thus, the whole length of the body 'is ſeven feet. The height, from the hind feet 'to the reins, is eight feet ſix inches. From 'the diſproportion in the height and length, it 'appears that this animal can be of little uſe. 'He feeds upon the leaves of trees; and, when 'he wants to drink, or to take any thing from 'the ſurface of the earth, he is obliged to bend 'down on his knees.'

In examining what travellers have ſaid concerning the giraffe, I find they all agree, that this animal, when in its natural ſituation, can reach with its head from ſixteen to ſeventeen feet high *; and that its fore legs are twice as long as the hind legs; ſo that, when it ſits on its crupper, it ſeems to be entirely on end †. They likewiſe

* Proſper Alpinus is the only author who gives a different idea of the magnitude of this animal, by comparing it to a ſmall horſe: 'Anno 1581, Alexandriæ vidimus camelopardalem, 'quem Arabes zurnap et noſtri giraffam appellant; hæc equum 'parvum elegantiſſimumque repræſentare videtur;' p. 236. There is every reaſon to believe, that the giraffe ſeen by Proſper Alpinus was very young, and had by no means acquired its full growth. The ſame remark may be made with regard to the ſkin deſcribed by Haſſelquiſt, which he ſays was of the ſize of a ſmall camel.

† The fore-feet of the giraffe are twice as long as thoſe behind, which, by ſupporting a long ſtraight ſlender body, raiſes the fore part of the animal to a prodigious height. Its head nearly reſembles that of a ſtag, except that its blunt horns

likewiſe agree, that, on account of this diſproportion, it cannot run quickly; that its diſpoſitions are extremely mild; that, by this quality, as well as by other phyſical habits, and even by the form of the body, it approaches nearer to the nature of the camel than any other animal; and that it is one of the ruminating animals, and, like them, wants the cutting teeth in the upper jaw. We likewiſe learn, from the teſtimony of ſome voyagers, that this animal is found in the ſouthern parts of Africa, as well as in thoſe of Aſia *.

From what we have related, it is evident, that the giraffe is a peculiar ſpecies, and very dif-

horns exceed not half a foot in length. Its ears are long, like thoſe of a cow, and it has no teeth in the upper jaw. Its hairs are round and fine, its limbs ſlender, reſembling thoſe of a ſtag, and its feet are like thoſe of a bull. Its body is very ſlender, and the colour of its hair reſembles that of the lynx. In manners and diſpoſitions, it reſembles the camel; *Voyage de Villamont*, *p.* 688. — I ſaw, at the caſtle of Cairo, two giraffes. Their neck was longer than that of the camel, and they had two horns of half a foot in length, on the top of the head, and a ſmall one on the front. The two fore-legs were very long, and the hind ones remarkably ſhort; *Coſmographie du Levant*, *par Thevet*, *p.* 142.

* In the iſland of Zanzibar, in the neighbourhood of Madagaſcar, there is a certain quadruped called *graffe* or *giraffe*, which has a neck about a fathom and a half in length, and its fore-legs are much longer than thoſe behind. Its head is ſmall, and of different colours, as well as the body. This animal is very mild and tame, and never injures any perſon; *Deſcript. des Indes Orientales*, *par Marc Paul*, *liv.* iii. *p.* 116. — Giraffa animal adeo ſylvaticum ut raro videri poſſit. . . . . homines videns in fugam fertur, tametſi non ſit multæ velocitatis; *Leon. Afric. Deſcript. Afric. tom.* ii. *p.* 745.

ferent from all others. He ſeems, however, to make a nearer approach to the camel than to the ſtag or the ox. It is true the giraffe has two horns, and the camel has none: But the other reſemblances are ſo numerous, that I am not ſurpriſed to ſee the appellation of *Indian camel* beſtowed on him by ſome travellers. Beſides, we know not the ſubſtance of which the horns of the giraffe are compoſed; and, conſequently, we know not whether by this part he approaches nearer to the ſtag or to the ox: They may, perhaps, be a ſubſtance very different from either. They may be compoſed of a congeries of hairs, like the horns of the rhinoceros; or they may be a ſubſtance of a peculiar texture. Nomenclators ſeem to have been firſt led into the blunder of ranking the giraffe with the ſtags; by the pretended paſſage of Belon, quoted by Geſner, which, if real, would be deciſive of the point: They appear likewiſe to have miſunderſtood what has been mentioned by authors concerning the hair of theſe horns. They imagined that theſe writers had ſaid, that the horns of the giraffe were clothed with hair, like the new ſprung horns of the ſtag; and hence concluded that they were of the ſame nature. We ſee, on the contrary, from the notes above quoted, that the horns of the giraffe are only ſurrounded with hair, and have a tuft of large coarſe hairs at the point, and not clothed with a down or velvet, like thoſe of the ſtag. From this circumſtance,

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it is not improbable, that the horns of the giraffe are compoſed of a congeries of hairs nearly in the ſame manner as thoſe of the rhinoceros: Their blunt or truncated points ſeem to favour this idea. Beſides, if we conſider that, in all animals, which carry *wood* inſtead of horns, as the elk, the rein-deer, the ſtag, the roebuck, &c. this *wood* is always divided into branches or antlers, and that, on the contrary, the horns of the giraffe are ſimple, and conſiſt but of one ſtem, we will be convinced that they are not of the ſame nature, unleſs analogy, in this inſtance, be entirely violated. The tubercle on the front, which appears to be a third horn, ſtrengthens this opinion. The two horns, which are not pointed, but blunt at the extremities, are perhaps only tubercles; of a greater length than the former. The females, according to the teſtimony of all travellers, have horns as well as the males, only they are ſomewhat ſmaller. If the giraffe really belonged to the deer kind, analogy would again ſuffer violation; for, among all the animals of this kind, none of the females, except the female rein-deer, have horns, and we have given the reaſon of this phænomena. On the other hand, as the giraffe, on account of the exceſſive height of its limbs, cannot feed upon herbage, but with great difficulty; as its chief and almoſt only food conſiſts of the leaves and buds of trees, it may be preſumed, that the ſubſtance of the horns, which are the moſt conſpi-

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cuous reſidue of the organic particles derived from the food, is analogous to wood, like that of the ſtag. Time will confirm one or other of theſe conjectures. A ſingle word more added to Haſſelquiſt's minute deſcription would have determined the genus of this animal. But ſchool-boys, who have only their maſter's gamut in their heads, or rather in their pockets, muſt perpetually blunder, and make the moſt eſſential omiſſions; becauſe they renounce that ſpirit of reſearch which ought to guide every obſerver, and ſee only through the falſe medium of arbitrary arrangements, which prevents them from reflecting on the nature and relations of the objects they meet with, and obliges them to deſcribe upon a bad model. As every object differs materially from another, the whole ſhould be treated in a different manner. A ſingle character happily diſcovered, is more deciſive, and conveys more knowledge of the ſubject, than a thouſand minute and trifling features; for in proportion to their number, they neceſſarily become equivocal and common, and, of courſe, ſuperfluous, if not hurtful to the real knowledge of Nature, who ſports with the rules we preſcribe to her, ſoars above all methodical diſtributions, and can only be perceived by the penetrating eye of genius.

SUPPLEMENT.

WE here give the figure of a giraffe from a drawing tranſmitted to us from the Cape of Good Hope, which we have rectified in ſome points from the information of Mr. Bruce. With regard to the horns of this animal, we are ſtill uncertain whether they are permanent, like thoſe of the ox, antilope, goat, rhinoceros, &c. or whether they are annually renewed like thoſe of the deer-kind. They ſeem to grow during the firſt years of the animal's life; but they never riſe to a great height; for the longeſt which have been ſeen exceeded not twelve or thirteen inches; and they are generally not above ſix or eight inches. We are indebted to M. Allamand, a celebrated Profeſſor at Leyden, for the exact knowledge we have obtained concerning theſe horns. The following is an extract of a letter he wrote on this ſubject to M. Daubenton, dated October 31, 1766.

'I have the honour to inform you, that I 'am in poſſeſſion of a ſtuffed giraffe. Both 'you and M. de Buffon have expreſſed a deſire 'to know the nature of its horns. I have cut 'off one of them, which I ſend you, that 'you may have a more exact idea of it. You 'will remark, that this giraffe was very young. 'The Governour of the Cape, from whom I re-

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'ceived it, writes me, that it was killed when 'lying near its mother. Its height is about ſix 'feet, and its horns, of courſe, are ſhort, not 'exceeding two inches and a half. They are 'every where covered with ſkin and hairs; and 'thoſe at the point are much longer than the 'others, and form a pencil, the height of which 'exceeds that of the horn. The baſe of the horn 'is more than an inch broad, and conſequently 'forms an obtuſe cone. To diſcover whether 'it was hollow or ſolid, I ſawed it through lon-'gitudinally, along with a portion of the ſkull 'to which it adhered. I found it to be ſolid, 'and a little ſpongy, becauſe it had not yet ac-'quired all its conſiſtence. Such is its texture, 'that it appears not to be compoſed, like that 'of the rhinoceros, of hairs united together; 'and it reſembles the horns of the ſtag more 'than thoſe of any other animal. I would even 'ſay, that there is no difference between theſe 'two ſubſtances, if I were certain, that a horn, 'lately ſent to me under that name, was really 'the horn of a giraffe. It is ſtraight, half a 'foot long, and pretty much pointed. There 'ſtill remain ſome veſtiges of the ſkin with 'which it had been covered; and it differs from 'a ſtag's horn only in figure. If theſe obſer-'vations are not ſufficient, I ſhall with pleaſure 'ſend you the two horns, that you may ex-'amine them along with M. de Buffon. With 'regard to this animal, I ſhould farther remark,

'that

'that the alledged difference between its fore 'and hind legs ſeems to be greatly exaggera- 'ted; for it is hardly perceptible in my young 'giraffe.'

Beſide theſe horns which are found on the head of the female giraffe, as well as on that of the male, there is, at almoſt an equal diſtance between the noſtrils and eyes, a remarkable excreſcence, which ſeems to be a bone covered with a ſoft ſkin, and garniſhed with ſmooth hair. This oſſeous excreſcence is more than three inches long, and is much inclined toward the front, or makes a very acute angle with the bone of the noſe. The colour of this animal's robe is a bright ſhining yellow, and the ſpots are, in general, rhomboidal.

It is extremely probable, from the inſpection of theſe horns, which are ſolid, and reſemble in ſubſtance the horns of the ſtag, that the giraffe may be ranked in the ſame genus: Of this there could not remain a doubt, if we were certain that he ſhed his horns annually. But it is now unqueſtionable that he ought to be ſeparated from the ox-kind, and other animals whoſe horns are hollow. Meanwhile, we ſhall conſider this large and beautiful animal as conſtituting a particular and ſolitary genus, which correſponds very well with the other facts in Nature, who, in voluminous ſpecies, never doubles her productions. The elephant, the rhinoceros, the hippopotamus, and perhaps the giraffe, are animals

animals forming particular genera, or ſolitary ſpecies, who have no collaterals. This is a privilege which ſeems to be conferred ſolely on animals which greatly ſurpaſs all others in magnitude.

In a letter I received from Holland, the ſubſcription of which was illegible, I had the following deſcription of a giraffe:

'Africa produces no animal more beautiful 'or more curious than the giraffe. From the 'point of the noſe to the tail, he is twenty-five 'feet long. He has received the name of *Ca-* '*melopard*, becauſe he ſomewhat reſembles the 'camel in the figure of his head, the length of 'his neck, &c. and becauſe his robe is va- 'riegated with irregular ſpots, like that of the 'leopard. He is found at twenty-four leagues 'from the Cape of Good Hope, and is ſtill 'more frequent at greater diſtances. The teeth 'of this animal are ſimilar to thoſe of the ſtag. 'His horns are a foot long: They are ſtraight 'as a man's arm, garniſhed with hair, and ſeem 'to be truncated at their extremities. The neck 'conſtitutes at leaſt one half of the length of 'the animal, which, in figure, pretty much re- 'ſembles that of a horſe. The tail would alſo 'be pretty ſimilar, if it were equally furniſhed 'with hair as that of the horſe. The legs are 'like thoſe of the ſtag; the feet are garniſhed 'with very black, obtuſe, and widely ſeparated 'hoofs. When the animal leaps, he firſt raiſes

'the

'the two fore feet, and then thoſe behind, as a 'horſe would do who had his two fore feet tied 'together. He runs ſlowly, and with a bad 'grace: He may be eaſily overtaken in the 'chaſe. He carries his head always high, and 'feeds on the leaves of trees only, being un-'able to paſture on the ground, on account of 'his great height. When he drinks, he is obliged 'to reſt on his knees. The females are gene-'rally of a bright yellow colour, and the males 'of a browniſh yellow. Some of them are 'nearly white, with brown or black ſpots.'

Supplement from Schneider's Edition.

'M. de Buffon, with much propriety, blames 'our modern nomenclators, becauſe, when treat-'ing of the giraffe, they are ſilent with regard 'to the nature of his horns, which alone can 'form a criterion to aſcertain the ſpecies to 'which he belongs; and becauſe they give dry 'and minute deſcriptions, without adding a 'figure. We ſhall endeavour to ſupply both 'theſe defects.

'M. Allamand, profeſſor of natural hiſtory 'in the univerſity of Leyden, is in poſſeſſion of 'the ſtuffed ſkin of a young giraffe. He obli-'gingly communicated to us a drawing of it, 'which we cauſed to be engraven; and he 'added the following deſcription.

'M. Tulbagh, governour of the Cape of Good 'Hope, who has enriched our academical ca- 'binet with many rare productions of nature, 'writes me, that the young giraffe in our pof- 'feſſion was killed by his hunters at a conſider- 'able diſtance from the Cape, when lying near 'its mother, whom it ſtill ſucked. Hence it 'appears, that the giraffe is not peculiar to 'Æthiopia, as Thevenot has alledged.

'As ſoon as I received it, I examined the 'horns, with a view to elucidate M. de Buffon's 'doubt with regard to their ſubſtance. They 'are not hollow like thoſe of oxen and goats, 'but ſolid, and nearly of an uniform texture, 'like thoſe of the ſtags, from which they differ 'only in being thinner, ſtraighter, and not di- 'vided into branches, or antlers. They are 'totally covered with the ſkin of the animal; 'and, for three fourths of their length, this 'ſkin is furniſhed with ſhort hair, ſimilar to 'that which covers the body. Toward the 'points, the hair becomes longer, riſes about 'three inches above the blunt end of the horns, 'and is of a black colour. Hence it is very 'different from the down on the young horns 'of the ſtag.

'Theſe horns appear not to be compoſed of 'united hairs, like thoſe of the rhinoceros. 'Their texture is likewiſe totally different. 'When ſawn through longitudinally, we per- 'ceive that they conſiſt of a hard plate, which

'conſtitutes

'conſtitutes their external ſurface, and incloſes 'a ſpongy ſubſtance. This, at leaſt, is the caſe 'with the horns of my young giraffe. Perhaps 'the horns of adults are more ſolid. M. de 'Buffon is now in a condition to determine this 'point; for, along with the horns of my giraffe, 'I ſent him another belonging to one more ad-'vanced in years, which a friend of mine re-'ceived from the Eaſt Indies.

'Though theſe horns are ſolid, like thoſe of 'the ſtag, I ſuſpect that the animal does not ſhed 'them annually. They ſeem to be an excreſ-'cence of the frontal bone, like the bone which 'ſerves as a nucleus to the hollow horns of oxen 'and goats; and, conſequently, it is impoſſible 'that they can fall off. If this conjecture be 'well founded, the giraffe conſtitutes a parti-'cular genus, perfectly diſtinct from the animals 'which ſhed their horns, and alſo from thoſe 'which have hollow but permanent horns.

'In the middle of the front of adult giraffes, 'there is a protuberance which ſeems to be the 'rudiments of a third horn. No ſuch protube-'rance appeared in our giraffe; probably becauſe 'it was too young.

'All the authors, both ancient and modern, 'who deſcribe this animal, tell us, that the fore 'legs are twice as long as the hind ones. They 'could not poſſibly be deceived concerning a 'character ſo ſtriking. But I can affirm, that, 'in this article, the giraffe muſt change greatly

'in growing; for, in our young one, the hind 'legs were equally long with thoſe before. This 'circumſtance, however, prevents not the ante-'rior part of the giraffe from being higher than 'the poſterior, which is owing to the difference 'in the thickneſs of the body, as may be ſeen in 'the figure. But this difference is by no means 'ſo great as has been repreſented.

'The neck of the giraffe is the firſt thing 'which ſtrikes a ſpectator. It is longer than 'that of any other quadruped, not excepting 'the camel, who, beſides, folds his neck in dif-'ferent ways, which the giraffe ſeems to be in-'capable of performing.

'His colour is a dirty white, interſperſed with 'yellowiſh ſpots, very near each other on the 'neck, more diſtant on the reſt of the body, 'and of a figure which approaches to a paral-'lelogram or rhomb.

'The tail is ſlender, in proportion to the 'length and ſtature of the animal. Its extre-'mity is garniſhed with a tuft of black hairs, 'which are ſeven or eight inches long.

'The mane is compoſed of reddiſh hair, 'three inches long, and inclined toward the 'hind part of the body. It extends from the 'head along the neck, and down to the middle 'of the back; and, at the diſtance of ſome 'inches, it is again continued; but the hair in-'clines toward the head. It ſeems to recom-'mence near the origin, and to extend to the

'extremity

'extremity of the tail: But the hairs are ſhort,
'and ſcarcely to be diſtinguiſhed from thoſe
'which cover the reſt of the body.

'The eye-lids, both ſuperior and inferior, are
'garniſhed with a range of very ſtiff hairs. There
'are ſimilar hairs, but thinly ſcattered, round the
'mouth.

'The aſpect of the giraffe indicates a mild and
'docile animal; and this is the character given
'of him by thoſe who have ſeen him alive.

'This deſcription of the giraffe, added to
'what M. de Buffon has collected from dif-
'ferent authors, and accompanied with the
'figure, is ſufficient to give us more exact ideas
'concerning this animal than we had hitherto
'obtained.'

M. Alamand's great knowledge and accuracy, in every ſubject of which he treats, are apparent from the above deſcription. I would have copied his engraving, if his giraffe had not been too young. The figure I have given is that of an adult. I ſhall only remark, that I ſuſpect the longeſt of the horns he was ſo obliging as to ſend me, does not belong to a giraffe. The ſhort ones are very thick, while it is very thin, in proportion to their reſpective lengths. In the anonymous deſcription above related, it is ſaid, that the horns of the adult giraffes are *a foot in length, and as thick as a man's arm.* If the horn under conſideration, which is half a foot long,

really belonged to a giraffe, it ought to be double its preſent thickneſs. Beſides, this pretended horn of a giraffe is ſo ſimilar to the firſt horns of a young ſtag, that it may be regarded as belonging to the latter animal.

As to the nature of the giraffe's horns, I am inclined to adopt M. Alamand's opinion. The protuberance on the front, which is unqueſtionably oſſeous, makes a kind of third horn. The horns adhered to the cranium, without the ſupport of moulds; and, conſequently, ought to be conſidered as oſſeous prolongations of the bones of the head. The hair which ſurrounds and overtops them has no reſemblance to that which covers the young ſhoots of the ſtag, or fallow deer. This hair ſeems to be permanent, as well as the ſkin from which it iſſues. Hence the horn of the giraffe is a bone, and differs from that of the ox by its covering, the latter being ſurrounded with a horny ſubſtance, or hollow horn, and the former with hair and ſkin.

Plate CCXIV.

A. Bell Sculpt.

GIRAFFE

The LAMA* and the PACOS†.

IN all languages, two names are frequently beſtowed on the ſame animal, one of which relates to its ſtate of liberty, and the other to its domeſtic

* The lama, or camel of Chili and Peru, has an almoſt even back, ſmall head, fine black eyes, and very long neck, bending much, and very protuberant near the junction with the body. In a tame ſtate, it has ſmooth ſhort hair; in a wild ſtate, long coarſe hair, which is white, gray, and ruſſet, diſpoſed in ſpots. According to Hernandez, it is yellowiſh, with a black line from the head along the top of the back to the tail, and the belly is white. The ſpotted may poſſibly be the tame; the laſt the wild lamas. The tail is ſhort; the height is from four to four and a half feet; and the length, from the neck to the tail, ſix feet. In general, the ſhape exactly reſembles that of the camel, only it wants the dorſal bunch; *Pennant's Synopſ. of Quad. p.* 64.

Lamu, lhama, glama, huanacus, guanaco, cornera de tierra, guanapo, wianaque, pelon ichiatl oquitli, hueque chillehueque, names given to this animal by the Spaniards, and the natives of Chili and Peru.

Ovis Peruana; *Hernand. Mox. p.* 660. *Marcgr. Braſil. p.* 243.

Huanuca-lhama; *de Laët, p.* 328.

Ovis Indica; *Geſner, Quad. p.* 149.

Llama; *Church. Collect. p.* 44. Guanoco; *ibid. Cieza's Travels, p.* 232. *Frezier's Voyages, p.* 154. *Feuillée, Obſ. Peru, p.* 23. *Ulloa's Voy. vol.* i. *p.* 478. *Wood's Voyage, in Dampier, vol.* iv. *p.* 95.

Camelus glama, corpore lævi, topho pectorali; *Lynn. Syſt. Nat. p.* 91.

Camelus Peruvianus, *glama* dictus; *Raii Synopſ. Quad. p.* 145.

Camelus pilis breviſſimis veſtitus; camelus Peruanus; le chameau de Perou; *Briſſon, Quad. p.* 34.

Camelus ſpurius; *Klein, Quad. p.* 42.

† The body of the pacos is covered with long and very fine wool, of the colour of dried roſes, or a dull purple. The

domeſtic ſtate. The wild boar and hog are the ſame animal, and theſe two names have no relation to any difference in the nature of the creatures, but to the condition of the ſpecies, one part of which is under the dominion of man, and the other independent. The ſame remark applies to the lamas and pacos, which were the only domeſtic animals * of the ancient Americans: Theſe names were appropriated to the animals in their domeſtic condition. The wild lama was called *huanacus* or *guanaco*, and the wild pacos, *vicuna*, or *vigogne*. I thought this remark neceſſary to prevent confuſion. Theſe

belly is white: In a tame ſtate, the colour varies. It is ſhaped like the former, but much leſs. The leg of one I ſaw was about the ſize of that of the buck; *Pennant's Synopſ. of Quad. p.* 66.

Pacos; *Hernandez, p.* 663.

Paco, vicuna; *De Laët, p.* 328. *Cieza, p.* 233.

Ovis Chilenſis; *Marcgrav. p.* 244. *Wood's Voyage, Dampier, vol.* iv. *p.* 95. *Narborough's Voyage, p.* 32.

Alpague, vicuna; *Frezier's Voyage, p.* 153. *Ulloa's Voyage, vol.* i. *p.* 479.

Camelus ſeu camelo congener Peruvianum lanigerum, *Pacos* dictum; *Raii Synopſ. Quad. p.* 147.

Camelus laniger; *Klein. Quad. p.* 42.

Camelus pilis prolixis toto corpore veſtitus; *Le Vigogne*; *Briſſon, Quad. p.* 35.

Camelus pacos, tophis nullis, corpore lanato; *Linn. Syſt. Nat. p.* 91.

* Before the arrival of the Spaniards, the Indians of Peru had no domeſtic animals but the pacos and the huanacus; *Hiſt. des Incas, p.* 265.

animals.

animals are peculiar to the New World: They even love particular lands, beyond which they are never found. They appear to be confined to that chain of mountains which extends from New Spain to Terra Magellanica. They inhabit the moſt elevated regions of this globe, and ſeem to require a lighter air than that of our higheſt mountains.

It is ſingular, that, though the lama and pacos are domeſtic in Peru, Mexico, and Chili, as the horſe is in Europe, or the camel in Arabia, we have hardly any knowledge of them; and that, though the Spaniards have had the dominion of theſe vaſt countries for more than two centuries, none of their authors have given a complete hiſtory and exact deſcription of theſe animals. It is alledged, indeed, that they cannot be tranſported into Europe, nor even deſcend from their mountains, without periſhing in a ſhort time. But, in Quito, Lima, and other towns, where men of letters reſide, theſe animals might be drawn, deſcribed, and diſſected. Herrera* ſays very little concerning them; and Garcilaſſo † only

* In the mountains of Peru there is a ſpecies of camel, the wool of which is manufactured into cloth; *Deſcript. des Indes Occidentales, par Herrera, p.* 244.

† P. Blas Vallera remarks, that the cattle of Peru are ſo mild that children uſe them as they pleaſe. There is a larger and a ſmaller kind. The tamed huanacus *(lamas)* are of different colours, and the wild kind are all of a bay brown. Theſe animals are about the height of a ſtag, and reſemble the camel, only they want the bunch, and their neck is long

only copies what had been mentioned by other writers. Acoſta and Gregoire de Bolivar have collected the greateſt number of facts regarding the natural diſpoſitions of the lamas, and the utility derived from them. But we know nothing of their internal ſtructure, and of their time of geſtation: We know not whether the lama and pacos be two diſtinct ſpecies; or whether they intermix together. Theſe, and many other facts neceſſary to complete their hiſtory, are ſtill objects of inquiry.

Though they are ſaid to periſh when removed from their native country, it is certain, that, after the conqueſt of Peru, ſome lamas were tranſported to Europe. The animal mentioned by Geſner, under the name of *Allocamelus*, and of which he gives a figure, is a lama, that was brought alive from Peru to Holland in the year 1558 *. It is the ſame with that mentioned by Matthio-

and ſmooth.... The cattle called *paco lamas (pacos)* are not nearly ſo much eſteemed.... The pacos are ſmaller than the lamas, and reſemble the wild vicunas. They are very delicate and ſlender; and their wool, though the quantity of it be ſmall, is extremely fine. Acoſta remarks, that this animal, as well as ſeveral others, is variouſly employed as a medicine by the natives; *Hiſt. des Incas, tom.* ii. *p.* 260.

* Allocamelus Scaligeri apparet eſſe hoc ipſum animal cujus figuram proponimus ex charta quadam typis impreſſa mutuati cum hac deſcriptione, Anno Domini 1558, Junii die 19. animal hoc mirabile Mittelburgum Selandiæ advectum eſt, antehac a Principibus Germaniæ nunquam viſum, nec a Plinio aut antiquis aliis ſcriptoribus commemoratum. Ovem Indicam eſſe dicebant e Piro *(forte Peru)* regione, ſexies mille milliaribus

Matthiolus *, under the denomination of *Elaphocamelus*, and which he has pretty accurately deſcribed. The pacos, and perhaps alſo the lama, have ſeveral times been brought to Spain, with a view to naturalize them †. We ought, therefore, to be better informed concerning theſe animals, which might be rendered extremely uſeful to us; for, it is probable, that they would

milliaribus fere Antverpio diſtante. Altitudo ejus erat pedum ſex, longitudo quinque; collum cigneo colore candidiſſimum. Corpus *(reliquum)* rufum vel puniceum. Pedes ceu ſtruthocameli, cujus inſtar urinam quoque retro reddit hoc animal (erat autem mas annorum ætatis quatuor); *Geſner. Hiſt. Quad. p.* 149. et 150.

* Longitudo totius corporis a cervice ad caudam 6 pedum erat; altitudo a dorſo ad pedis plantam 4 tantum. Capite, collo, ore, ſuperioris præſertim labii ſciſſura ac genitali, camelum fere refert; at caput oblongius eſt; aures habet cervinas, oculos bubulos, quin etiam ut ille anterioribus dentibus in ſuperiore maxilla caret, ſed molares utrinque habet; ruminat, dorſo eſt ſenſim prominente, ſcapulis prope collum depreſſis, lateribus tumidis, ventre lato, clunibus altioribus, et cauda brevi ſpithamæ fere longitudine; quibus omnibus cervum fere refert, quemadmodum etiam cruribus præſertim poſterioribus; pedes illi biſulci ſunt, diducta anteriori parte diviſura. Ungues habet acuminatos qui circa pedis abitum in cutem craſſam abeunt, nam pedis planta, non ungue ſed cute, ut in multifidis et ipſo camelo, contegitur; retromingit hoc animal ut camelus, et teſtes ſubſtrictos habet; pectore eſt amplo, ſub quo, ubi thorax ventri connectitur, extuberat globus ut in camelo, vomicæ ſimilis, e quo neſcio quid excrementi ſenſim manare videtur; *P. And. Matthioli, Epiſt. lib.* v.

† The king of Spain ordered pacos to be brought to Spain, in order to propagate and naturalize them. But they were all killed by the climate; *Hiſt. des Aventur. Flibuſt. par Oexmelin. tom.* ii. *p.* 367.

thrive

thrive on our Alps * and Pyrennees, as well as on the Cordelieres.

Peru, according to Gregoire de Bolivar, is the native country of the lamas: They have, indeed, been brought into other provinces, as New Spain, where, however, they are regarded more as objects of curiosity than of utility. But, through the whole extent of Peru, from Potosi to Caracas, these animals are extremely numerous. They constitute the sole wealth of the Indians, and contribute not a little to that of the Spaniards. The flesh of the lamas is good eating; their wool is excellent; and their whole lives are spent in transporting the commodities of the country. Their common load is a hundred and fifty pounds, and the strongest of them carry two hundred. They travel pretty long journeys in a country impassable to all other animals. They march slowly, and seldom accomplish more than four or five leagues a day. Their gait is grave and firm. They descend precipitous ravins, and climb steep rocks, where even man himself dares not accompany them. They walk commonly four or five days on end, after which they wish to repose; and they spontaneously rest twenty-four or thirty hours before they resume their march. They are much employed in transporting the rich ores dug out of the mines of Potosi. Bolivar remarks, that, in his time, three hundred

* No animal walks so securely upon rocks as the lama; because he adheres by means of a kind of spur on his feet; *Voyage de Coreal, tom.* i. *p.* 352.

thousand

thouſand of theſe animals were conſtantly occupied in this work.

Their growth is quick, and their life is not of long duration. At the age of three years, they are in a condition of producing, continue in full vigour till twelve, when they begin to decay; and, at fifteen, they are entirely uſeleſs. Their natural diſpoſition ſeems to be modelled upon that of the Americans. They are mild and phlegmatic, and perform every thing by weight and meaſure. When they incline to reſt a few minutes in their journey, they bend their knees, and lower their bodies with the greateſt precaution, to prevent their load from falling, or being deranged; and, whenever they hear their conductor's whiſtle, they riſe with the ſame precaution, and proceed on their journey. In going along, they browſe wherever they find herbage; but they never eat in the night, even though they have been ſparingly fed during the day; for this time is ſpent in chewing their cud. When they ſleep or ruminate, they reſt on their breaſt, with their legs folded under their belly. When fatigued with travelling, if they once ſink down under the load, no blows can force them to riſe. The laſt reſource is to ſqueeze their teſticles; but even that is often ineffectual. They remain obſtinately where they lie; and, if their maſter continues to abuſe them, they deſpair and kill themſelves, by alternately ſtriking their heads from right to left upon the ground. They neither defend

fend themſelves with their feet nor their teeth, and they may be ſaid to have no other arms but thoſe of indignation. They ſpit in the face of thoſe who inſult them; and, it is alledged, that the ſaliva which they throw out when enraged, is ſo acrid as to raiſe bliſters on the ſkin.

The lama is about four feet high, and his body, including the neck and head, is five or ſix feet in length. This animal has a well ſhaped head, large eyes, a pretty long muzzle, and thick lips, the ſuperior one being divided, and the inferior ſomewhat pendulous. He has neither cutting nor canine teeth in the upper jaw. His ears are four inches long, which he carries forward, erect, and moves at pleaſure. The length of his tail, which is ſtraight, ſlender, and a little raiſed, exceeds not eight inches. His feet are cloven, like thoſe of the ox; but they are armed behind with a ſpur, which aſſiſts the animal in ſupporting itſelf upon rugged and difficult ground. The wool upon his back, crupper, and tail, is ſhort, but very long upon the flank and belly. The lamas vary in colour; ſome of them are white, others black, and others of a mixed colour *. Their dung reſembles that of the goat.

The

* The head of the lama is proportionally ſmall, and has ſome reſemblance to that of the goat and ſheep. The upper lip is divided like that of the hare: Through this aperture they ſpit, to the diſtance of ten paces, upon thoſe who diſturb them; and, if the ſaliva falls upon the face, it inflames or bliſters the ſkin. They have a long neck, which bends downward where it ſprings from

The penis of the male is ſlender and crooked in ſuch a manner that he diſcharges his urine backward. The lamas are extremely laſcivious *, and yet they copulate with much difficulty. The aperture of the female is very ſmall. She proſtrates herſelf to receive the male, and invites him with her ſighs. But ſeveral hours, and ſometimes a whole day paſſes, before they can accompliſh their purpoſe: All this time is ſpent in groaning, grumbling, and particularly in conſpurcating each other: As theſe tedious preludes

from the body, like that of the camel, to which they would have a conſiderable reſemblance, if they had a bunch on the back. Their height is about four feet and a half. They walk with their head erect, and with a pace ſo uniform, that even blows are incapable of making them move more quickly. They will not carry their loads during the night; but are obliged to be unloaded, in order to allow them to paſture. They eat little, and are never furniſhed with drink. Like the ſheep, they have cloven feet, and a ſpur above, which renders them ſure-footed among the rocks. Their wool has a ſtrong odour: It is long, ſpotted with white, gray, and red, and equally beautiful, though of an inferior quality, with that of the pacos; *Voyage de Frezier, p.* 138.

* Salaciſſimum hoc eſſe animal id mihi conjecturam facit, quod cum ſui generis femellis ſit deſtitutum, magna cum prurigine capris ſe commiſceat, non tamen erectis ut aliàs capræ hirco aſcendente ſolent, ſed humi ventre accubantibus, ita cogente animali anterioribus cruribus. Itaque ſuper aſcendens coit, non autem averſis clunibus. Adeo venere, vernali autumnalique tempore, ſtimulatur hoc animal ut illud viderim humile quoddam præſepium avena refertum conſcendiſſe, genitaleque illi magno cum murmure tamdiu confricaſſe, quo uſque ſemen redderet, plurimis una hora replicatis vicibus. Non tamen concepere capræ hujuſce animalis ſemine refertæ; *Matthiol. Epiſt. lib.* v.

are

are more fatiguing than the operation itſelf, their keeper abridges their labour, and aids their arrangement with his hand. They ſeldom produce more than one at a time. The mother has only two teats, and the young one follows her the moment after it is brought forth. The fleſh of the young ones is very good; but, when old, it is dry and hard. The fleſh of the domeſtic is better than that of the wild lamas, and their wool is likwiſe much ſofter. Their ſkin is very compact: The Indians make ſhoes of it, and the Spaniards uſe it for harneſſes. The food of theſe animals, which are ſo uſeful in the country that produces them, coſts almoſt nothing. As they are cloven-footed, they require no ſhoes; and the thick wool with which they are covered, renders ſaddles unneceſſary. They have no need of corn or hay; green herbage, of which they take but ſmall quantities *, being ſufficient

* The ſkin of the huanacus is hard: The Indians ſoften it with greaſe, and uſe it for ſoles to their ſhoes. But as this leather is not curried, it is ſoon waſted by the rain: The Spaniards make fine harneſſes to their horſes of the lama's hide: They employ theſe animals, as the Indians do, in tranſporting their merchandiſe. Their common route is from Cozer to Potoſi, which is about two hundred leagues, and their daily journey ſeldom exceeds three leagues; for they walk ſlowly, and, if puſhed beyond their ordinary pace, they lie down, and it is impoſſible to raiſe them, even when the load is taken off their backs; ſo that they often die on the ſpot. . . . . When tranſporting goods, they go in troops, and forty or fifty of them are always left unloaded, in order inſtantly to relieve thoſe which begin to be fatigued. The fleſh of this animal is

ſufficient for their nouriſhment. In drinking, they are ſtill more moderate. They quench their thirſt with their ſaliva, which, in this animal, is more abundant than in any other.

The huanacus, or lamas in a ſtate of nature, are ſtronger, more active, and nimbler than the domeſtic kind. They run like the ſtag, and, like the wild goat, they climb the ſteepeſt rocks. Though in full poſſeſſion of liberty, they aſſemble in flocks, ſometimes to the number of two or three hundred. When they perceive any perſon, they look at him with aſtoniſhment, diſcovering neither fear nor pleaſure: They then blow through their noſtrils, neigh nearly like a horſe, and fly off together to the tops of the mountains. They prefer the north ſide and the cold regions of the hills. They often climb and

is excellent; for it is both well taſted and wholeſome, eſpecially that of the young ones, which exceed not four or five months old. . . . . Though theſe animals are very numerous, their food coſts almoſt nothing; for, after their journey, they are unloaded, and allowed to paſture in the fields. It is unneceſſary to ſhoe or ſaddle them; for they are cloven footed; and their wool prevents them from being incommoded by their load, which their maſters take care not to place on their backbone, otherwiſe it would kill them. . . . . The conductors of theſe animals never enter the towns, but ſleep in tents, that their cattle may have an opportunity of paſturing during the night. They take four months in performing a journey from Cozer to Potoſi, two in going, and as much in returning. . . . . At Cozer, the beſt lamas ſell at eighteen ducats a piece, and the common ſort at twelve or thirteen. The fleſh of the wild huanacus is good, but inferior to that of the domeſtic kind; *Hiſt. des Incas, tom.* ii. *p.* 260.

ſojourn above the line of the ſnow. When travelling on ice and covered with hoar-froſt, they are in better plight than in a temperate climate. In the Sierras, which are the moſt elevated parts of the Cordelieres, they are much more numerous, and have more ſtrength and vigour than in the Lanos, which are lower. Theſe wild lamas are hunted for the ſake of their fleeces. It is difficult for the dogs to follow them; and, if allowed time to gain the rocks, both the hunters and dogs are obliged to abandon them. They ſeem to be as much afraid of the weight of the air as of heat; for they are never found in low lands: And, as the chain of the Cordelieres, which is more than three thouſand fathoms above the level of the ſea at Peru, preſerves nearly the ſame elevation from Chili to the Straits of Magellan, the huanacus or wild lamas are very numerous throughout all that extent *. But, on the coaſt of New Spain, where theſe mountains ſink conſiderably lower, no lamas are to be found,

* In the neighbourhood of Port Deſire, at ſome diſtance from the Straits of Magellan, we found a number of thoſe wild ſheep which the Spaniards call *Winaques*. . . . . Though very alert and timid, we killed ſeven of them during our ſtay; and their wool ſeems to be much finer than that of any other animal. . . . . They go in flocks of five or ſeven hundred; and, as ſoon as they perceive any perſon, they ſnort with their noſes, and neigh like horſes; *Wood's Voyage, in Dampier, vol.* iv. *p.* 95.—We ſaw, at Tucuman, a province adjacent to Peru, large ſheep, which were uſed as beaſts of burden, and whoſe wool was as fine as ſilk; *Travels of Woods Rogers, tom.* ii. *p.* 65.

except

except the domeſtic kind which are brought thither.

The pacos are a ſpecies which may ſupply that of the lamas, as the aſs might ſupply the place of the horſe. They are ſmaller, and leſs proper for labour; but their fleeces are more uſeful. The long wool with which they are covered, is an article of luxury, as good and as precious as ſilk. The pacos, which are alſo called *alpaques*, when in a domeſtic ſtate, are often totally black, and ſometimes of a brown colour mixed with yellow. The wild pacos have the colour of dried roſes; and this natural colour is ſo fixed, that it ſuffers no change from the hand of the workman. Their wool makes excellent gloves, ſtockings, bed-clothes, and carpets. This commodity alone conſtitutes a valuable branch of commerce to the Spaniards. The beaver of Canada, the Calmuck ſheep, and the Syrian goat, furniſh not a finer hair: That of the pacos is as dear as ſilk. This animal poſſeſſes many things in common with the lama. It belongs excluſively to the ſame country; for it exiſts no where but on the Cordelieres. It has likewiſe the ſame diſpoſitions, and nearly the ſame manners and temperament. As its wool, however, is longer and more buſhy, it ſeems to be ſtill leſs afraid of cold. It dwells more freely among the ſnows and ice of cold

countries, and is extremely numerous in Terra Magellanica *.

The pacos alſo reſemble the lama in figure; but they are ſmaller, their legs are ſhorter, and their muzzle is more contracted. Their wool is of the colour of dried roſes. They have no horns. They live and paſture on the moſt elevated parts of the mountains. Snow and ice ſeem rather to refreſh than incommode them. They go in flocks, and run nimbly. They are very timid; and when they perceive any perſon, they fly off, driving their young before them. The hunting of the pacos was rigorouſly prohibited by the ancient kings of Peru, becauſe theſe animals do not multiply faſt. At preſent, they are much leſs numerous than at the time the Spaniards firſt took poſſeſſion of that country. Their fleſh is not ſo good as that of the huanacus; and they are ſought after ſolely for the ſake of their wool, and the bezoars which they produce. The manner of taking them ſhows their timidity, or perhaps their weakneſs. Several people aſſemble to chaſe theſe animals in ſome narrow defile, acroſs which cords are ſtretched to the height of three or four feet, with

* On the eaſt coaſt of Patagonia, near the river Plata, the vigognes are very numerous. But theſe animals are ſo timid and fleet, that it is very difficult to ſeize them; *Anſon's Voyage*. —The moſt common quadrupeds in Port St. Julian, in Terra Magellanica, are the guanacos; *Hiſt. du Paraguai, par Charlevoix, tom.* vi. *p.* 207.

pieces

pieces of linen or woollen cloth fixed upon them. When the pacos arrive, the motion of the pieces of cloth, produced by the wind, ſo terrifies them, that they dare not paſs, but collect in large groups, which makes it an eaſy buſineſs to kill vaſt numbers of them. But, if there happen to be any huanacus in the flock, as they are taller and leſs timid than the pacos, they ſpring over the cords; and, when the example is once ſet, the pacos likewiſe leap and eſcape from the hunter *.

With regard to the domeſtic pacos, they are employed, like the lamas, in carrying burdens; but they cannot bear as much weight even in proportion to their ſize. They are ſtill more ſubject to capricious obſtinacy. When once they lie down with their load, rather than riſe, they will ſuffer themſelves to be cut in pieces. The Indians make no uſe of the milk of theſe animals; becauſe they never yield more than is neceſſary to ſuckle their young. The great profits derived from their wool induced the Spaniards to endeavour to naturalize the pacos in Europe. They were tranſported into Spain; but the climate deſtroyed them †. I am perſuaded, however, as I formely remarked, that theſe animals might ſucceed in our mountains, and particularly in the Pyrennees. Thoſe who brought

* Voyage de Frezier, p. 138.

† Hiſt. des Aventures des Flibuſtiers, p. 367.

them to Spain did not conſider, that, even in Peru, they ſubſiſt only in the cold region, or upon the tops of the higheſt mountains; that they are never found in low lands; that they die in warm countries; that, on the contrary, they are at preſent very numerous in the neighbourhood of the Straits of Magellan, where the cold is much more intenſe than in the ſouth of Europe; and, conſequently, that, in order to preſerve them, they ſhould be landed, not in Spain, but in Scotland, or even in Norway. The foot of the Pyrennees, Alps, &c. would probably anſwer the intention ſtill better, where they could climb to the region which was moſt agreeable to their conſtitution. I have dwelt the longer on this ſubject, becauſe I imagine that theſe animals would be a great acquiſition to Europe, and would be productive of more real advantage than all the metals of the New World, which only load us with an uſeleſs weight *, ſince a grain of gold or ſilver was formerly equal in value to what now coſts us an ounce of theſe metals.

Animals which feed upon herbs and inhabit the high mountains of Aſia and Africa, produce what are called the *oriental bezoars*, the virtues of which are ſo much extolled. Thoſe of the Euro-

* What advantage have we derived from the rich mines of Peru? To procure theſe metals, millions of men have periſhed in the bowels of the earth, and their blood and labours have anſwered no other purpoſe, than to load us with an unneceſſary weight.

pean

pean mountains, where the qualities of the plants are more temperate, produce only uſeleſs balls called *ægagropili;* and, in South America, all the animals that inhabit the mountains of the Torrid Zone, furniſh what are denominated *occidental bezoars*, which are ſtill more ſolid, and have, perhaps, higher virtues than the *oriental.* The *vigogne*, or wild pacos, produces a great number, as well as the huanacus. Theſe ſtones are likewiſe produced by the ſtags and roebucks on the mountains of New Spain. The lamas and pacos produce no fine bezoars, unleſs when in their natural wild ſtate. The domeſtic kind afford only ſmall, black bezoars, without any virtue. The beſt ſtones are of a dark green colour, and generally proceed from the wild pacos, particularly thoſe which inhabit the higheſt parts of the mountains, and commonly paſture among the ſnows. Of theſe mountain pacos, both the males and females produce bezoars. They hold the firſt rank after the oriental bezoars, and are in much higher eſtimation than thoſe of New Spain, which proceed from ſtags, and are leſs efficacious than any of the other kinds.

The TWO-TOED* and THREE-TOED SLOTHS†.

THESE two animals have been denominated *sloths*, on account of the slowness of their movements, and the difficulty with which they walk. Though they resemble each other in

* The sloths have no cutting teeth in either jaw; but they have canine teeth and grinders. The fore legs are much longer than the hind, and the claws are long.—The two-toed sloth has a round head, short projecting nose, ears like the human, lying flat on the head, two long claws on the fore feet, and three on the hind. The hair on the body is long and rough; in some parts curled and woolly, in some, of a pale red above, cinereous below; and in others, of a yellowish white below, and a cinereous brown above. The length of that in the British museum is eleven inches; I believe it is a young one: It has no tail; *Pennant's Synopf. of Quad. p.* 321.

Unau, the name of this animal in Maragnon. P. d'Abbeville says, that there are two kinds, the one about the size of a hare, and the other about twice as large; *Miſſion au Maragnon, p.* 252.

Tardigradus Ceilonicus catulus; *Seba, tom.* i. *p.* 54. *tab.* 33. *fig.* 4.——Tardigradus Ceilonicus fœmina; *Id. ib. tab.* 34.

Tardigradus pedibus anticis didactylis; posticis tridactylis; Le Pareſſeux de Ceilan; *Briſſon. Quad. p.* 22.

Bradypus didactylus, manibus didactylis cauda nulla; *Linn. Syſt. Nat. p.* 51.

† The three-toed sloth has a blunt black nose, a little lengthened, very small external ears, and eyes small, black, and heavy. From the corner of each eye, there is a dusky line.

in many reſpects, they differ, both externally and internally, by characters ſo marked, that it is impoſſible not to recogniſe them as very diſtinct ſpecies. The unau, or two-toed ſloth, has no tail, and only two claws on the fore feet: The aï, or three-toed ſloth, has a tail, and three claws on all the feet. The muzzle of the former is longer, the front more elevated, and the ears more apparent, than thoſe of the latter. Their hair is alſo very different. The ſtructure

line. The colour of the face and throat is a dirty white. The hair on the limbs and body is long, very uneven, and of a cinereous brown colour. The tail is ſhort, being a mere ſtump. The legs are thick, long, and aukwardly placed. The face is naked. There are three toes, and three very long claws on each foot. The length of that in the Britiſh muſeum is twelve inches; but it grows to the ſize of a middle ſized fox; *Pennant's Synopſ. of Quad. p.* 319.

Aï, the Braſilian name of this animal, taken from its plaintive cry, *a, i,* which it often repeats; *Hay,* according to Lery; and *Hau* or *Hauthi,* according to Thevot. The *Perillo ligero* of Oviedo, and the *Haut* of Nieremberg.

Arctopithecus; *Geſner. Quad. p.* 869. *Icon. Quad. p.* 96.

Ignavus; *Cluſ. Exot. p.* 110. 372.

Sloth; *Raii Synopſ. Quad. p.* 245. *Edwards's Gleanings, pl.* 310.

Ignavus Americanus, riſum fletu miſcens; *Klein. Quad. p.* 43.

Tardigradus pedibus anticis et poſticis tridactylis; *Briſſon. Quad. p.* 21.

Aï, ſeu tardigradus gracilis Americanus; *Seba, tom.* i. *p.* 53. *tab.* 33. *fig.* 2.

Ouaikare, Pareſſeux; *Barrière Hiſt. Fr. Equinox. p.* 154.

Bradypus tridactylus, pedibus tridactylis, cauda brevi; *Linn. Syſt. Nat. p.* 50.

Bigritia ſive Haut; *Nieremb. p.* 163.

Aï, ſive ignavus; *Marcgrav. Hiſt. Nat. Braſil. p.* 221.

and ſituation of ſome parts of their viſcera are likewiſe different. But the moſt remarkable diſtinction is derived from this ſingular circumſtance, that the unau has forty-ſix ribs, and the aï only twenty-eight, which ſhows them to be ſpecies very remote from each other. This number of ribs, in the body of an animal ſo ſhort, is an exceſs or error of Nature; for no animal, however large, has ſuch a number of ribs: The elephant has only forty, the horſe thirty-ſix, the badger thirty, the dog twenty-ſix, man twenty-four, &c. This difference in the ſtructure of the ſloths indicates a greater diſtance between theſe two ſpecies than between the dog and cat, which have both the ſame number of ribs; for external differences are nothing when compared to thoſe which are internal: The former may be regarded as cauſes, and the latter as effects only. The interior frame of animated beings is the foundation of Nature's plan; it is the conſtituent form, and the origin of all figure: But the external parts are only the ſurface or drapery. How often have we not found, in the courſe of our comparative examination of animals, that a very different external appearance covered internal parts perfectly ſimilar; and that, on the contrary, the ſlighteſt internal diſtinction produced great external differences, and changed the natural diſpoſitions, powers, and qualities of the animal? How many

animals

animals are armed, covered, and adorned with excreſcent parts, whoſe external ſtructure correſponds exactly with others which are totally deprived of ſuch appendages? But this is not a proper place for ſuch nice diſquiſitions. We ſhall only remark, that, in proportion as Nature is vivacious, active, and exalted in the monkey kind, ſhe is ſlow, reſtrained, and fettered in the ſloths. From a defect in their conformation, the miſery of theſe animals is not more conſpicuous than their ſlowneſs. They have no cutting teeth; the eyes are obſcured with hair; the chops are heavy and thick; the hair is flat, and reſembles withered herbs; the thighs are ill jointed to the haunches; the legs are too ſhort, ill turned, and terminated ſtill worſe: Their feet have no ſoles, and no toes which move ſeparately, but only two or three claws diſproportionally long, and bended downward, which move together, and are more hurtful to their walking, than advantageous in aſſiſting them to climb. Slowneſs, habitual pain, and ſtupidity, are the reſults of this ſtrange and bungled conformation. The ſloths have no weapons either offenſive or defenſive. They are furniſhed with no means of ſafety; for they can neither fly nor dig the earth. Confined to a ſmall ſpace, or to the tree under which they are brought forth, they are priſoners in the midſt of ſpace, and cannot move the length of one fathom in an

hour *. They drag themſelves up a tree with much labour and pain. Their cry and interrupted accents they dare only utter during the

* Perillo ligero, ſive canicula agilis, animal eſt omnium quæ viderim ignaviſſimum; nam adeo lente movetur, ut ad conficiendum iter longum dumtaxat quinquaginta paſſus, integro die illi opus ſit.——In ædes tranſlatum naturali ſua tarditate movetur, nec a clamatione ulla aut impulſione gradum accelerat; *Oviedo in ſummario Ind. Occid. cap.* 23. *traduit de l'Eſpagnol en Latin par Cluſius. Exotic. lib.* v. *cap.* 16. Tanta eſt ejus tarditas ut unius diei ſpatio vix quinquaginta paſſus pertranſire poſſit; *Hernand. Hiſt. Mex.*——The Portugueſe have given the name of *ſloth* to a very extraordinary animal, which is of the ſize of an opoſſum.——The hind part of its head is covered with a coarſe mane, and its belly is ſo groſs that it ſweeps the ground. It never riſes on its legs, and trails ſo ſlowly along, that in fifteen days it can hardly accompliſh the length of a ſtone-caſt; *Hiſt. des Indes, par Maffé, p.* 71. *Deſcript. des Indes Occident. par Herrera, p.* 252.—— 'Tam lentus eſt illius greſſus et membrorum motus, ut quindecim 'ipſis diebus ad lapidis ictum continuo tractu vix prodeat;' *Piſon. Hiſt. Braſ. p.* 322. *Nota*, This aſſertion of Piſo, which he has borrowed from Maffé and Herrera, is much exaggerated.—This is the moſt ſluggiſh of all animals: It is needleſs to employ greyhounds to overtake him; a tortoiſe is ſufficient; *Deſmarchais, tom.* iii. *p.* 301. *Nota*, This is another exaggeration.——They require eight or nine minutes to advance one foot to the diſtance of three inches, and they move one after another with equal ſlowneſs. Blows do not accelerate their pace. I have whipt ſome of them, in order to diſcover whether pain would give them any animation: But they ſeemed to be inſenſible, and I was unable to make them move faſter; *Dampier's Voyage.*——The ſloths do not move fifty paces in a day. When the hunter wiſhes to take one of them, he may proceed with his ſport, and, on his return, he will find the animal very little removed from its former place; *Voyage à Cayenne, par Binet, p.* 341.——This animal receives the epithet of *courſer*, becauſe he requires a whole day to accompliſh a quarter of a league; *Hiſt. de l'Orenoque, par Gumilla, tom.* ii. *p.* 13. *Nota*, This author ſeems to be the only one who approaches the truth, with regard to the ſlowneſs of theſe animals.

night.

night. All these circumstances announce the misery of the sloths, and recall to our minds those defective monsters, those imperfect sketches of Nature, which, being hardly endowed with the faculty of existence, could not subsist for any length of time, and have accordingly been struck out of the list of beings. If the regions inhabited by the sloths were not desert, but had been long occupied by men and the larger animals, these species would never have descended to our times: They would have been annihilated, as must happen in some future period. We formerly remarked, that every thing that possibly could be, really did exist; of which the sloths are a striking example. They constitute the last term of existence in the order of animals endowed with flesh and blood. One other defect added to the number would have totally prevented their existence. To regard those bungled sketches as beings equally perfect with others, to call in the aid of final causes to account for such disproportioned productions, and to make Nature as brilliant in these as in her most beautiful animals, is to view her through a narrow tube, and to substitute our own fancies for her intentions.

Why should not some animals be created for misery, since, in the human species, the greatest number of individuals are devoted to pain from the moment of their existence? Evil, it is true,

proceeds

proceeds more from ourſelves than from Nature. For a ſingle perſon who is unhappy becauſe he was born feeble or deformed, there are millions rendered miſerable by the oppreſſion of their ſuperiors. The animals, in general, are more happy, becauſe the ſpecies have nothing to fear from individuals: To them there is but one ſource of evil; to man there are two. Moral evil, of which he himſelf is the fountain, has accumulated into an immenſe ocean, which covers and afflicts the whole ſurface of the earth. Phyſical evil, on the contrary, is reſtrained within very narrow bounds: It ſeldom appears alone; for it is always accompanied with an equal, if not a ſuperior good. Can happineſs be denied to animals, when they enjoy freedom, have the faculty of procuring ſubſiſtence with eaſe, and poſſeſs more health, and organs capable of affording greater pleaſure than thoſe of the human ſpecies? Now, the generality of animals are moſt liberally endowed with all theſe ſources of enjoyment. The degraded ſpecies of ſloths are perhaps the only creatures to whom Nature has been unkind, and who exhibit to us the picture of innate miſery.

Let us take a cloſer view of the condition of theſe creatures. By the want of teeth they can neither ſeize prey, nor feed upon fleſh or herbage. Reduced to the neceſſity of living upon leaves and wild fruits, they conſume much time in trailing their bodies to the foot of a tree, and

ſtill

ſtill more in climbing to the branches*; and, during this ſlow and melancholy exerciſe, which ſometimes laſts ſeveral days, they are obliged to ſuffer the moſt preſſing hunger. When arrived upon a tree, they never deſcend. They cling to

* It is alledged by the natives, that this animal lives ſolely on the leaves of a certain tree, called in their language *Amahut*. This tree is higher than any other in that country. Its leaves are very ſmall and delicate; and, becauſe the ſloth is commonly found in theſe trees, they have given it the name of *Haut*; *Singul. de la France Antarc. par Thevet, p.* 100.—The ſloth lives ſolely on the leaves of trees, and the higheſt branches ſerve him for a retreat; but it coſts him two days journey to arrive at them..... Neither careſſes, threatenings, nor even blows, can make him move quicker; *Hiſt. des Indes, par Maffé, p.* 71. *Herrera, p.* 252.—The ſloth is not ſo large, nor ſo rough as the *tamanoir*, or great ant-eater..... He feeds upon leaves..... Theſe animals do much miſchief to trees; after eating all the leaves of one tree, they employ five or ſix days in deſcending it and climbing another, however nearly ſituated; and, though plump and fat when they begin their journey, they are reduced to ſkin and bone before it is finiſhed. They never abandon a tree till they have made it as bare as it can be in the middle of winter; *Dampier's Voyage*.—They climb trees, but ſo ſlowly, that they are eaſily taken. When ſeized, they make no reſiſtance, and never attempt to fly. If a long poll is preſented to the ſloth, he begins to mount it; but the ſlowneſs of his motion is tireſome: When he arrives at the top he remains there, without taking the trouble of deſcending; *Voyage de Cayenne, par Binet, p.* 341.—The ſloths have four legs, which they employ only in climbing: When perched upon a tree, they never quit it till they have eat the whole leaves. They then deſcend, and mount another, the leaves of which they devour in the ſame manner. We placed this animal on the loweſt ſail of the fore-maſt. It ſpent two hours in climbing to the ſcuttle, which a monkey would have accompliſhed in half a minute. One would imagine that it moves by a ſpring, like the pendulum of a clock; *Travels by Woods Rogers*.

the

the branches, and devour ſucceſſively the leaves of every twig. They paſs ſeveral weeks in this ſituation, without receiving any drink. When they have rendered the tree entirely naked, they ſtill remain; becauſe they cannot deſcend. In fine, when the preſſure of hunger becomes ſuperior to the dread of danger or death, being unable to deſcend, they allow themſelves to tumble down like an inanimated maſs; for their ſtiff and inactive limbs have not time to extend themſelves in order to break the fall.

When on the ground, they are at the mercy of all their enemies. As their fleſh is not abſolutely bad, both men and rapacious animals go in queſt of theſe animals. It appears that they do not multiply faſt, or at leaſt, if they produce frequently, it muſt be in ſmall numbers at a time; for they have only two paps. Every circumſtance, therefore, concurs to deſtroy them; and it is extremely difficult for the ſpecies to ſupport itſelf. But, though ſlow, awkward, and almoſt incapable of motion, they are obſtinate, ſtrong, and tenacious of life. They can live very long without victuals of any kind *. They are covered with thick, dry hair; and, being incapable of exerciſe, they loſe little by perſpiration; and, though their food be meager, they fatten by re-

* I had a preſent of a living *kaut*, which I kept twenty-ſix days, during which he neither eat nor drank; *Singular. de la France Ant. par Thevet, p.* 99.

poſe.

poſe. Though they have no horns nor hoofs, nor cutting teeth in the under jaw, yet they belong to the ruminating tribes, and have ſeveral ſtomachs. Hence the quality of their food may be compenſated by the quantity they take at a time. What is ſtill more ſingular, inſtead of very long inteſtines, like other ruminating animals, their guts are very ſhort and ſmall, like thoſe of the carnivorous kind. This contraſt exhibits the ambiguity of Nature. The ſloths are unqueſtionably ruminating animals; They have four ſtomachs; and yet they want every other character, both internal and external, which generally belongs to animals of this claſs. There is ſtill another ſingularity in the conformation of the ſloths: Inſtead of three diſtinct apertures for the diſcharge of urine and excrements, and for the purpoſes of generation, theſe animals have but one, which terminates in a common canal, as in birds.

Moreover, if the miſery reſulting from a defect of ſentiment be not the worſt of all, the pain endured by the ſloths, though very apparent, ſeems not to be real; for their ſenſations appear to be blunt. Their calamitous air, their dull aſpect, and their reception of blows without emotion, announce their extreme inſenſibility. This bluntneſs of ſenſation is farther demonſtrated, by their not dying inſtantly when their

their hearts and bowels are entirely cut out. Piſo, who made this cruel experiment *, tells us, that the heart, after being ſeparated from the body, beat in a lively manner for half an hour; and that the animal continued to contract its legs ſlowly, as commonly happens during ſleep. From theſe facts, this quadruped ſeems to approach not only the turtle, but the other reptiles which have no diſtinct centre of ſenſation. All theſe beings may be ſaid to be miſerable, but not unhappy: Nature, even in her moſt neglected productions, always appears more in the character of a parent than of a ſtepmother.

Theſe two animals are peculiar to the ſouthern regions of the New Continent, and are no where to be found in the Old. We formerly remarked, that the editor of Seba's cabinet was deceived when he calls the two-toed ſloth, or unau, the *ſloth of Ceylon*. This error, which has been

* Secui fœmellam vivam..... habentem in ſe fœtum omnibus modis perfectum cum pilis, unguibus, et dentibus, amnioni more cæterorum animalium incluſum. Cor motum ſuum validiſſime retinebat poſtquam exemptum erat e corpore per ſemihoram; placenta uterina conſtabat multis particulis carneis inſtar ſubſtantiæ renum, rubicundis magnitudinis variæ, inſtar fabarum; in illas autem particulas carneas (tenuibus membranulis connexas) per multos ramulos vaſa umbilicalia inſtar funis contorta, inſerta erant. Cor fœmellæ duas habebat inſignes auriculas cavas. Exempto corde cæteriſque viſceribus, multo poſt ſe movebat, et pedes lente contrahebat ſicut dormituriens ſolet. Mammillas duas cum totidem papillis in pectore fœmella et fœtus gerebant; *Piſon. Hiſt. Braſil.* *p.* 322.

adopted

adopted by Klein, Linnæus, and Briſſon, is now more evident than it was formerly. The Marquis de Montmirail has a live unau, which was tranſmitted to him from Surinam: Thoſe we have in the Royal Cabinet were brought from the ſame place and from Guiana; and I am perſuaded that both ſpecies exiſt through the whole deſerts of America, from Braſil * to Mexico. But, as they have never frequented the northern regions, they could not paſs from the one Continent to the other. If theſe animals have ſometimes been ſeen in the Eaſt Indies, or on the coaſt of Africa, it is certain that they muſt have been tranſported thither. They cannot endure cold; and they likewiſe dread rain. The alternation of moiſture and dryneſs changes their fur, which has more the appearance of ill dreſſed hemp than of wool or hair.

I ſhall finiſh this article with ſome obſervations communicated to me by the Marquis de Montmirail, concerning an unau, or two-toed ſloth, which he fed three years in his menagery: 'The 'hair of the unau is much ſofter than that of 'the aï.... All that has been ſaid by travellers 'concerning the exceſſive ſlowneſs of the ſloths 'ſhould, probably, be applied only to the aï, 'or three-toed ſpecies. The unau, though very 'heavy, and of an extremely awkward gait,

* The aï, or three-toed ſloth, deſcribed and engraven by Edwards, came from the Bay of Honduras; and Ulloa ſays, that it is found in the environs of Porto-bello.

'mounted and descended the highest tree several 'times in a day. It is in the evening and dur- 'ing the night that he was most active, which 'made me suspect that he saw very ill in the day, 'and that his eyes were of no use to him but in 'the dark. I purchased this animal at Amster- 'dam. It was fed with sea biscuit; and I was 'told, that, during the verdure of the trees, it 'would require nothing but leaves. We gave 'him leaves, which he eat freely, when they were 'tender; but, as soon as they began to dry, or 'were pierced by caterpillars, he refused them. 'During the three years that I kept him alive in 'my menagery, his ordinary food was bread, 'apples, and roots; and his drink was milk. 'He always laid hold, though with difficulty, of 'what he wanted to eat, with his fore paws; 'and the difficulty increased in proportion to the 'largeness of the morsel. He seldom cried; 'his cry is short, and he never repeats it twice, 'without a considerable interval. This cry, 'though plaintive, has no resemblance to that of 'the aï, if it be true that *aï* is the sound of that 'animal's voice. The most natural situation of 'the unau, and which he prefers to all others, 'is hanging on a branch, with his body turned 'downward. He sometimes sleeps in this po- 'sition, his fore paws being fixed to the same 'point, and his body forming an arch. The 'strength of his muscles is incredible; but it be- 'comes useless to him when he walks; for his

'motion is conſtrained and wavering. This 'ſtructure alone ſeems to be the cauſe of the 'animal's ſlowneſs, which, beſides, has no violent 'appetites, and does not recogniſe thoſe who 'take care of him.'

SUPPLEMENT.

M. De la Borde remarks, that there are two ſpecies of theſe animals in Cayenne, the one called the *baſhful-ſloth*, and the other the *ſheep-ſloth*. The latter is twice as long as the former, and of the ſame thickneſs. He has long, buſhy, whitiſh hair, and weighs about twenty-five pounds. He throws himſelf down upon men from the tops of trees, but in a manner ſo ſluggiſh, that it is eaſy to avoid him. He feeds during the day as well as the night.

'The baſhful ſloth,' M. de la Borde remarks, 'has black ſpots on his body, weighs twelve 'pounds, keeps always on trees, and eats the 'leaves of the Surinam fig-tree, which are ſaid 'to be poiſonous. The bowels of this ſloth 'poiſon dogs, and yet the fleſh is good to 'eat; but its uſe is confined to the common 'people.

'Both ſpecies produce only a ſingle young, 'which they always carry on their back. It is

 'probable,

'probable, though I am not certain, that the fe-
'males bring forth on trees. They feed on the
'leaves of the Brafilian plumb-tree *, and of
'the Surinam fig. The two fpecies are equally
'common; but they are not frequent in the
'environs of Cayenne. They fometimes fufpend
'themfelves by their claws on branches of trees
'which hang over the rivers; and, when in this
'fituation, it is eafy to cut the branch and make
'them fall into the water; for they never quit
'their hold.

'When afcending a tree, this animal carelefsly
'ftretches out one of its fore pats, and fixes its
'long claw as high as it can reach. It then
'heavily raifes its body, gradually fixes the
'other pat, and, in this manner, continues to
'climb. All thefe movements are incredibly
'flow and languid. When kept in houfes, they
'always climb upon fome poft or door, and
'never chooſe to reft on the ground. If a ftick is
'held out to them when on the ground, they
'lay hold of it, and mount to its top, where they
'firmly adhere with their fore paws, and em-
'brace the ftick with their whole body. They
'have a weak plaintive cry, which is heard at
'no great diftance.'

From this paffage, it is obvious, that the fheep-
floth is the fame with what we have called *unau*,
or the three-toed floth; and that the bafhful-
floth is the *aï*, or two-toed fpecies.

* Spondias lutea of Linnæus.

M. Vof-

Plate CCXV.

Two-toed SLOTH.

Plate CCXVI.

YOUNG three-toed SLOTHS.

Plate CCXVII.

ADULT three-toed SLOTH.

M. Voſmaër, an able naturaliſt, and ſuperintendant of the Prince of Orange's cabinet, has criticiſed two aſſertions in my hiſtory of theſe animals. He remarks, 'that we ought to reject 'the relation of M. de Buffon, when he tells us, 'that the ſloths are unable to deſcend from 'a tree, but allow themſelves to fall down like 'blocks *.'

I advanced this fact on the authority of eye-witneſſes, who aſſured me, that they had ſometimes ſeen the animal fall down at their feet. The fact is farther ſupported by the teſtimony of M. de la Borde. What I have ſaid on this ſubject, therefore, ought by no means to be rejected.

The ſecond aſſertion is not equally well founded. I willingly acknowledge my miſtake, when I ſaid that the ſloths had no teeth, and I thank M. Voſmaër for correcting this error.

* Deſcript. d'un Pareſſeux Pentedactile de Bengale, p. 5.

The SURIKATE, or FOUR-TOED WEASEL*.

THIS animal was purchaſed in Holland, under the name of *Surikate*. It is a native of Surinam, and other provinces of South America †. We fed it for ſome time; and afterwards M. de Seve, who has drawn, with equal ſkill and attention, the animals publiſhed in this work, having kept it alive during ſeveral months, communicated to me the remarks he had made with regard to its natural habits and diſpoſitions. It is a handſome, active, and dextrous animal, ſometimes walking on end, and frequently ſit-

* The four-toed weaſel, with the upper jaw much longer than the lower, and very moveable and pliant. The ears are rounded; the hair pretty long, hard, and upright, varied with black and white; the points black. It has only four toes on each foot, which is an exception to the weaſel kind. The tail is taper. The length of the animal, from noſe to tail, is about one foot, and that of the tail ſix inches; *Pennant's Synopſ. of Quad. p.* 228.

† Mr. Pennant remarks, that M. de Buffon is the only perſon who has deſcribed this animal, but that he ſeems to have been deceived with regard to the place of its nativity. Inſtead of South America, Mr. Pennant ſays, that it inhabits the Cape of Good Hope and the iſland of Java, and refers, for his authorities, to *Pallas, Miſcel. Zool. p.* 59, 60. and *Rumph. Herb. Amboin. app. p.* 71. The latter, when ſpeaking of the ichneumon, or muncos, ſays, 'ac diſtinguendus eſt a ſuracatje ſeu *Javanorum* zupe, quod eſt muſtela.'

ting

ting upright, with his fore-feet hanging down, his head erect, and moving on the neck as upon a pivot. He always assumed this attitude when he came near the fire to warm himself. He is not so large as a rabbit, and pretty much resembles the ichneumon, both in size and hair, only it is rougher, and the tail is not so long. But, by the prominency of the upper part of the muzzle, he makes a nearer approach to the coati, or Brasilian Weasel, than to any other animal. He has also a character which is peculiar to him and the hyæna; for they are the only animals which have four toes on all their feet.

At first, we fed this surikate with milk, because he was very young: But his taste for flesh soon appeared. He eat raw meat, and particularly the flesh of chickens, with great avidity. He likewise endeavoured to seize young animals. A young rabbit, which lived in the same house, would have fallen a prey to him, if he had not been prevented from making the attack. He was fond of fish, and still fonder of eggs. I have seen him carry off, with his two paws, eggs which had been put into the water to be boiled. He refused fruits, and even bread, unless it was mashed. Like the squirrel, he employed his fore paws to convey his victuals to his mouth. In drinking, he lapped like a dog, and never drank water but when it was warm. His ordinary drink was his own urine,

though it had a very ſtrong odour. He frolicked with the cats, and always innocently. He did no harm to the children, and never bit any perſon but the maſter of the houſe, to whom he had taken an averſion. He never gnawed with his teeth, but often injured the plaſter and furniture by ſcratching with his claws. He was ſo well tamed, that he knew his own name. He went about through the whole houſe, and returned whenever he was called. He uttered two kinds of ſounds. When he was tired by being alone, or heard any unuſual noiſe, he barked like a young dog; and, when he was careſſed, or felt any pleaſant emotion, he made a noiſe as briſk and ſtriking as a ſmall rattle rapidly turned round. This animal was a female, and appeared to be frequently in ſeaſon, notwithſtanding the coldneſs of the climate, which, though every thing was done to cheriſh and keep her warm, ſhe could ſupport during one winter only.

SUPPLEMENT.

WE formerly remarked, that the ſurikate did no injury to children; and that it never bit any perſon but adults, and, among others, the maſter of the family, againſt whom it had taken an averſion. I ſince heard that it never attacked either

either the mother or the children of his family, but that it bit a number of other perſons of both ſexes. M. de Sève remarked, that it was induced to bite by ſome particular odour. When laid hold of, the cartilage at the end of its noſe curled up while it ſmelled, and, according to the odour received, it either bit or did not bite. This experiment was tried upon a number of people; and, it is ſingular, whenever it bit one perſon, it always continued to bite him. Some people were ſo diſagreeable to him, that he endeavoured to make his eſcape in order to bite them; and, when he could not lay hold of the legs, he darted upon their ſhoes or pettycoats. He even uſed ſeveral artifices to come near thoſe whom he wiſhed to bite.

M. Voſmaër, in his deſcription of a flying ſquirrel, makes the following pertinent remarks.

'M. de Buffon,' ſays M. Voſmaër, 'has probably been deceived both with regard to the name and the native country of the ſurikate, which was laſt ſummer tranſmitted by M. Tulbagh to the Prince of Orange. It belongs not to America, but to Africa. This ſmall animal, a male and a female of which were directed to me, but the female died in the paſſage, was unknown to Kolbe, or at leaſt is not mentioned by him, and appears to be found far up the country only: This inference may be drawn from the governour's letter, which I received at the ſame time, and where he makes the following

'lowing remark: *I send by the Captain two 'small animals, a male and a female, to which 'I can neither give a name, nor refer them to any 'other species; because they were, for the first 'time, brought from the remote deserts and stony 'mountains of this vast country. They are very 'mild and gentle. They feed upon fresh meat, 'either boiled or raw, eggs, and ants. I hope they 'will arrive in life; for, I imagine, they were 'never hitherto seen in Europe.*'

The evidence of M. Tulbagh is positive, and M. de Vosmaër's remark is just; for, though I had this animal alive for a long time, I received its name and country from no better authority than an animal merchant, who told me he had purchased it in Holland under the name of *surikate*, and that it came from Surinam. We are now certain that it is neither found in Surinam nor in the other provinces of South America, but in the mountains of Africa above the Cape of Good Hope; and, as to the name, it is of little moment: It can be changed when we receive better information.

Plate CCXVIII.

SURICATE.

The TARSIER, or WOOLLY JERBOA*.

WE accidentally procured this animal from a perſon who could neither tell its name, nor from whence it came. It is remarkable for the exceſſive length of its hind legs. The bones of the feet, and particularly thoſe which compoſe the upper part of the *tarſus*, are prodigiouſly long; and it is from this diſtinctive character that we have derived the name of the animal. The tarſier, however, is not the only quadruped whoſe hind legs are conſtructed in this manner. The tarſus of the Egyptian jerboa is ſtill longer. Hence the appellation of *tarſier* is only precarious, and ought to be changed as ſoon as we learn the name which the animal receives in the country where it is produced. The jerboa is found in Egypt, Barbary, and the Eaſt

* The jerboa with a ſharp pointed noſe, long, erect, naked, tranſparent ears, large eyes, two cutting teeth in each jaw, and, what is peculiar to this ſpecies, two canine teeth in each. It has five long ſlender fingers on each foot, reſembling thoſe of a monkey. The fore legs are moderately long. The hind legs are of a very remarkable length, eſpecially the ſecond bone; that next the foot is ſlender and naked. The tail is exceedingly long and ſlender. The hair on the body is long, ſoft, and woolly. The head is aſh-coloured, and the reſt of the body tawny, mixed with aſh-colour. It is larger than a common mouſe; *Pennant's Synopſ. of Quad. p.* 298.

Indies.

Indies. I at firſt imagined that the tarſier might belong to the ſame countries, on account of its reſemblance to the jerboa. Both theſe animals are of the ſize of a middling rat. The hind legs of both are exceſſively long, and thoſe before very ſhort. In both, the tail is of a prodigious length, and garniſhed towards the extremity with long hairs. Both have very large eyes, and erect, large, open ears. In both, the inferior part of the hind legs are naked, while the reſt of the body is covered with hair. As theſe animals poſſeſs, in common, ſuch peculiar characters, it might be preſumed that they were neighbouring ſpecies, or, at leaſt, ſpecies produced by the ſame climate and country. From a compariſon of their other parts, however, this is rendered extremely doubtful. The tarſier has five toes on all his feet, and may be ſaid to have four hands; for his five toes are very long, and well ſeparated. The thumbs of the hind feet terminate in a flat nail; and, though the nails of the other toes be pointed, they are ſo ſhort and ſmall, that the animal can uſe its fore feet in the ſame manner as hands. The jerboa, on the contrary, has only four toes, and four long crooked claws on the fore feet; and, inſtead of a thumb, it has only a tubercle without any nail. But, what removes theſe animals to a greater diſtance, the jerboa has but three toes, or three large claws, on the hind feet. This diſtinction is too great for animals nearly allied in ſpecies; and

Plate CCXIX.

TARSIER.

and it is not impoſſible that they belong to very diſtant climates; for the tarſier, by his ſmall ſize, his four hands, long toes, and ſmall claws, and his long tail and feet, ſeems to make a near approach to the Murine, Mexican, and Surinam opoſſums. But we here throw out our doubts only; and ſhall be highly obliged to any perſon who can aſcertain or remove them, by pointing out the real country and name of this animal.

The PHALANGER, or SURINAM OPOSSUM*.

THE male and female phalanger, which were tranſmitted to us under the appellation of *Surinam rats*, are much leſs allied to the rats, than the animals whoſe hiſtory we have given under the name of *marmoſe*, or murine opoſſum, and *cayopollin* or Mexican opoſſum. We have rejected the denomination of *Surinam rats*, becauſe it is both compounded and ill applied. As the animal is mentioned by no traveller or naturaliſt, we have called it the *phalanger*, becauſe its phalanges are very ſingularly

* Opoſſum with a thick noſe; ſhort ears covered with hair; eight cutting teeth in the upper jaw; and two in the lower. The hair on the upper part of the body is reddiſh, mixed with light aſh-colour and yellow. The hind part of the head, and middle of the back, are marked with a black line. The throat, belly, legs, and part of the tail, are of a dirty yellowiſh white. The reſt of the tail is brown and yellow. The body of the female is marked with white. The firſt and ſecond toes of the hind feet are cloſely united. The claws are large. The thumb on the hind feet is diſtinct. The bottom of the tail is covered with hair for near two inches and a half; the reſt of it is naked. The length of the animal, from noſe to tail, is near nine inches, and that of the tail ten; *Pennant's Synopſ. of Quad. p.* 209.

Philander ex rufo luteus in dorſo, in ventre ex flavo albicans, capite craſſo; *Briſſon, Quad. p.* 213. *Seb. Muſ. tom.* i. *p.* 50. *tab.* 31. *fig.* 8. *Klein. Quad. p.* 58.

conſtructed,

Plate CCXX.

PHALANGER.

Plate CCXXI.

FEMALE PHALANGER.

conſtructed, and becauſe the two firſt toes of the fore feet are attached to each other, as far as the end of the laſt phalanx. The thumb is ſeparated from the other toes, and has no claw. This laſt character is not peculiar; for the Virginian and murine opoſſums have the ſame kind of thumb, but none of them have united phalanges.

Theſe animals ſeem to vary among themſelves, as appears from the figures of the male and female. They are of the ſize of a ſmall rabbit, or of a very large rat, and are remarkable for the exceſſive length of their tail, the prolongation of their muzzle, and the form of their teeth, which alone would be ſufficient to diſtinguiſh them from the murine and Virginian opoſſums, the rats, and every other ſpecies of quadrupeds.

The COQUALLIN, or VARIED SQUIRREL*.

THIS animal, which was sent to me from America, under the name of the *orange squirrel*, I recognised to be the same with that which Fernandez calls *qualucullotquapachli*, or *coztiocotoquallin* †. But, as these Mexican words are difficult to pronounce, I have abridged the last into *coquallin*. It is not a squirrel, though it resembles that animal in figure, and in bushiness of tail; for it differs from the squirrel not only in several external characters, but in its dispositions and manners.

The coquallin is much larger than the squirrel: *In duplam fere crescit magnitudinem*, says Fernandez. It is a handsome animal, and its colours are very remarkable. The belly is of a fine yellow colour, and the head, as well as the body, are variegated with white, black, brown, and orange. Like the squirrel, it covers itself with its tail; but it has no pencils of hair at the tips of the ears; it mounts not upon trees; and

* Squirrel with plain ears; the upper part of the body varied with black, white, and brown, and the belly tawny. It is twice the size of the common squirrel; *Pennant's Synopsis of Quad. p.* 285.

† Fernand. Hist. Anim. Nov. Hispan. p. 8.

it

Plate CCXXII.

COQUALLIN.

it dwells, like the ground ſquirrel, in holes, and under the roots of trees, where it brings forth its young. It lays up grain and fruits for nouriſhment during the winter. It is timid and crafty, and ſo wild that it can never be tamed.

The coquallin ſeems to be peculiar to the South American regions. The white and orange ſquirrels of the Eaſt Indies are much ſmaller, and their colours are uniform. They are genuine ſquirrels, which dwell and bring forth upon trees. But the coquallin, and ground ſquirrel of America, live under the earth like rabbits, and have no relation to ſquirrels but what ariſes from their figure.

The HAMSTER, or GERMAN MARMOT*.

THE hamſter is the moſt famous, as well as the moſt deſtructive of all rats. We omitted its hiſtory, when treating of the other rats, becauſe at that time we had not an opportunity of ſeeing and examining the animal. For the knowledge we have now acquired of it, we are obliged to the Marquis de Montmirail and M. de Vaitz, who ſent us two live

* Marmot with large rounded ears, and full black eyes. The colour of the head and back is a reddiſh brown, and that of the cheeks white. Beneath each ear there is a white ſpot, another on each ſhoulder, and a third near the hind legs. The breaſt, upper part of the fore legs, and the belly, are black. The tail is ſhort and almoſt naked. It has four toes and a fifth claw on the fore feet, and five toes behind. The length of the body is about nine inches, and that of the tail three; *Pennant's Synopſ. of Quad. p.* 271.

Hamſter, Hameſter, Cricetus; *Agricola, An. Subter. p.* 486. *Geſner. Quad. p.* 738. *Raii Syn. Quad. p.* 221.

Shrzeczek, Chomik; *Rzaczinſki Polon. p.* 232.

Porcellus frumentarius; *Schwenckfelde Theriotroph. p.* 118.

Krietſch, Hamſter; *Kramer. Auſtr. p.* 317.

Mus cricetus, cauda mediocri, auriculis rotundatis, corpore ſubtus nigro, lateribus rufeſcentibus, maculis tribus albis; *Linn. Syſt. Nat. p.* 82.

Glis ex cinereo rufus in dorſo, in ventre niger, maculis tribus ad latera albis; *Briſſon. Quad. p.* 117.

hamſters,

hamſters, accompanied with an inſtructive memoir * concerning their manners and diſpoſitions. We fed one of theſe animals during ſeveral months, in order to examine it attentively, and afterwards diſſected it, with a view to compare its internal ſtructure with that of other rats. In its anterior parts, it has a greater reſemblance to the water rat than to any other animal. It reſembles him ſtill more in the ſmallneſs of its eyes and the fineneſs of its ſkin. But the tail, inſtead of being long, is ſhorter than that of the compagnol or ſhort-tailed mouſe, which, as formerly remarked, has a great ſimilarity to the water rat in its internal conformation. The hamſter ſeems to be, with regard to the ſhort-tailed field mouſe, what the ſurmulot, or Norway rat, is to the long-tailed field mouſe. All theſe animals live under ground, and appear to be animated with the ſame inſtinct. They have nearly the ſame manners, and particularly that of collecting magazines of grain in their holes. We ſhall not, therefore, enlarge ſo much on the reſemblances in figure and diſpoſitions, as upon the differences which diſtinguiſh the

* I refer you to a pretty full memoir concerning the hamſter which I received from M. de Waitz, miniſter of ſtate to the Landgrave of Heſſe-Caſſel, who, to his brilliant talents for ſtate affairs, joins an ardent deſire for the improvement of natural hiſtory.——He, at the ſame time, tranſmitted to me two of theſe animals alive, which I ſhall ſend you by the firſt opportunity; *Lettre de M. le Marquis de Montmirail à M. de Buffon*, 31 *Juillet* 1762.

hamſter from all the other rats of which we have formerly treated.

Agricola * is the firſt writer from whom any genuine information can be derived concerning the hamſter; to which Fabricius † added a few facts.

* Hameſter, quem quidam cricetum nominant, exiſtit iracundus et mordax, adeo ut ſi eum eques incaute perſequatur, ſoleat proſilire et os equi appetere, et ſi prehenderit mordicus tenere. In terræ cavernis habitat——pedes habet admodum breves; pilis in dorſo color eſt fere leporis: In ventre niger, in lateribus rutilus, ſed utrumque latus maculis albis tribus numero diſtinguitur. Suprema capitis pars ut etiam cervix eumdem quem dorſum habet colorem. Tempora rutila ſunt; guttur eſt candidum——pili autem ſic inhærent cuti ut ex ea difficulter evelli poſſint——atque ob hanc cauſam et varietatem pelles ejus ſunt pretioſæ: Multa frumenti grana in ſpecum congerit, et utrinque dentibus mandit.——Ager Turingiæ eorum animalium plenus ob copiam et bonitatem frumenti; *Georg. Agricola*, de animantibus ſubterraneis; *Apud Geſner, Hiſt. Quad. p.* 738.

† Hameſter animal eſt agreſte ſub terra habitans——colore vario, ventre non candido ſed potius nigerrimo.——Dentes habet in anterioris oris ima ſupremaque parte binos, prominentes et acutos, malas laxas et amplas, ambas exportando importandoque replet: Ambabus mandit.——Cum terram eſtodit, primum anterioribus pedibus (quos talpæ ſimiles habet brevitate ſed minus latos) eam retrahit, longius progreſſus, ore exportat. Cuniculos ad antrum plures agit cubiti profunditate, ſed admodum anguſtos.——Antrum intus extendit ad capienda frumenta.——Meſſis tempore grana omnis generis frumenti importat.——Terra ante cuniculos erecta non tumuli modo aſſurgit, ut talparum tumuli, ſed ut agger dilatatur.——Veſcitur hoc animal frumento omnis generis, et ſi domi alatur pane ac carnibus. In agro etiam mures venatur. Cibum cum capit in pedes priores erigitur.——Quamvis autem corpore exiguum ſit, natura tamen eſt pugnax et temerarium. Laceſſitum quidquid ore geſtat pulſatis utroque pede malis ſubito egerit,

facts. But Schwenckfeld * has done more than all the other authors put together. He diſſected the hamſter, and gave a deſcription of it, which correſponds almoſt in every article with

egerit, recta hoſtem invadens, ſpiritu oris et aſſultu protervum ac minax. ——— Nec terretur facile, etiam ſi viribus impar ei ſit quem petit. ——— Vidi ipſe, cum equum aſſultando naribus corripuiſſet non prius morſum dimiſiſſe quam ferro occideretur. ——— Hameſtri pellis maxime durabilis. ——— In Turingia et Miſnia hoc animal frequens, non omnibus tamen in locis, ſed in uberrimis et fertiliſſimis. In Luſacia circa Radeburgum, e ſatis panici effoditur; Mulbergi ad Albim in vinetis reperitur, nam maturis quoque uvis veſcitur; *Georg. Fabricius, apud Geſner, Hiſt. Quad. p.* 739. & 740.

* Porcellus frumentarius, Hamſter minor paulo cuniculo. Longitudo dodrantalis et palmi unius. Pilis in dorſo fere leporis eſt colore. Gula, venter, et pedes interiores nigra ſunt. Rubet in lateribus et circa caudam, quæ coloris murini tres digitos longa. Maculæ albæ ſub auribus, juxta roſtrum, ſupra armos et coxam. Pedes admodum breves, digitis et unguiculis albidis quinis utrinque. In pedum planta, ſeu parte digitorum inferiore, tubercula veluti calli ubique eminent. Oculi ſplendidi, nigri, elegantes. Dentes habet ut lepus anteriores binos inciſores et laterales. Lingua mollis ſpongioſa. E bucculis veſiculæ utrinque amplæ membraneæ ſub cute porriguntur, quæ ſenſim gracileſcentes dorſo tenui ligamento alligantur. Has inſtar ſacci meſſis tempore granis tritici, ſiliginis, et aliis ſeu folles quoſpiam infarcit, atque in ſuos cuniculos comeatum in futuram hyemem congerit ac reponit.

Pulmonibus candidis quatuor ſunt lobi.

Cor renibus paulo majus mucrone obtuſiore. Hepar triplicatum apparet, unum ſuper alterum impoſitum. Inferior pars dorſo adjacens duos obtinet lobulos. Media, quæ maxima, integra abſque inciſuris integrum abdomen ſecundum latitudinem occupans ventriculum ex parte amplexatur. Superior portio diviſa aliis incumbens diaphragmati proxime ſubjacet. Fel nullum conſpicere licuit.

with ours; yet he is hardly quoted by our more modern naturalists, who content themselves with copying Gesner. In justice to this author, we have inserted his remarks entire; and, when to these we add the observations of M. de Waitz, the history of this animal will be complete.

'The habitations of the hamster are differently constructed, according to their sex, age, and the quality of the ground. The house of the male has an oblique passage, at the mouth of which there is a considerable heap of earth. At a distance from this oblique passage, there is a hole which descends perpen-

Ventriculus ei duplex. Unus candidus rotundiusculus, cui alter per isthmum annectitur longiusculus, sinistrum hypochondrium occupans, hinc prope isthmum œsophagus inseritur, alteri sub dextro hypochondrio intestina adhærent. In utroque reperiebatur chylus candidus, pulticulæ farinaceæ similis, crassior tamen in sinistro.

Intestina gracilia flavent; ubi desinunt, incipit cæcum anfractuosum amplum, hinc crassiora ad cæruleum vergunt colorem. Excernit pilulas longiusculas instar murium. Lien coloris sanguinei soleam fere humanam repræsentat.

Renes bini phaseoli magnitudine et figura. Vesicula candida pisum Italicum æquat, rotunda lagenulæ instar.

Parit quinque sexve, uno partu.

In terræ cavernis habitat, agri vastator et Cereris hostis. Autumo multa frumenti grana in specum congerit, et utrinque dentibus mandit.

Admodum pingue scit; ob id porcellis Indicis non inepte comparatur.

In cibum non recipitur; sed pelles confuuntur ad vestimenta.

De caverna sua aqua fervente seu frigida copiose infusa expellitur.

'dicularly

'dicularly into the chambers of the lodging. 'No earth appears near this hole; which ren-'ders it probable that the oblique paſſage is dug 'from without, and that the perpendicular hole 'is begun from below, and continued upward.

'The houſe of the female has likewiſe an ob-'lique paſſage, and, at the ſame time, two, three, 'and not unfrequently eight perpendicular holes, 'in order to allow her young to go out and in 'at pleaſure. The male and female have each 'a different dwelling, and the female makes 'her's deeper than the male.

'At the diſtance of a foot or two on each 'ſide of the perpendicular holes, the hamſters 'of both ſexes, according to their age, and their 'number of young, dig one, two, three, and 'ſometimes four cavities in the form of vaults, 'both above and below, which are more or leſs 'capacious in proportion to the quantity of their 'proviſions.

'The perpendicular hole is the common paſ-'ſage: The oblique one is made for the pur-'poſe of carrying out the earth. As the decli-'vity of this oblique paſſage is more gentle in 'one cavity than in another, it may likewiſe 'promote a circulation of air in thoſe ſubterra-'neous habitations. In the cavern where the fe-'male brings forth her young, there is no ma-'gazine of grain, but a neſt of ſtraw and herbs. 'The depth of the caverns is various: A young 'hamſter, in the firſt year, makes his cavern not

'above a foot deep; but the old ones frequently dig to the depth of four or five feet. 'The whole habitation, including the paſſages 'and caverns, is ſometimes from eight to ten feet 'in diameter.

'Theſe animals provide their magazines with 'dry clean grain, corn in the ear, peas, and 'beans, in their pods, and afterwards carry out 'the huſks and pods by the oblique paſſages. 'In tranſporting their proviſion, they uſe the 'pouches in their cheeks, each of which will 'hold a quarter of an Engliſh pint.

'The hamſter begins to lay up proviſions 'about the end of Auguſt. When his magazines 'are filled, he covers them, and carefully ſhuts 'up all the avenues with earth, which prevents 'his retreat from being eaſily diſcovered, and 'it is only to be recogniſed by the heap of 'earth near the oblique paſſage mentioned 'above; after which, the perpendicular holes 'muſt be inveſtigated. The moſt common me'thod of ſeizing theſe animals is to dig them 'out, which is a laborious taſk, on account of 'the extent and depth of their holes. A per'ſon, however, who accuſtoms himſelf to this 'ſpecies of hunting, fails not to profit by it; 'for, in autumn, which is the proper ſeaſon, he 'generally finds in each habitation, beſide the 'fur of the animal, two buſhels of good grain. 'The hamſters produce twice or thrice in a year, 'and bring forth five or ſix, and often more,

'at

'at each litter. In ſome years they appear in 'prodigious numbers, and, in others, hardly any 'of them are to be ſeen. It is in moiſt years that 'they multiply ſo greatly; and this numerous 'multiplication occaſions a dearth, by the gene-'ral devaſtation they make among the corn.

'At the age of ſix weeks or two months, the 'hamſters begin to dig their habitations; but 'they neither couple nor produce during the 'firſt year.

'The polecats deſtroy great numbers of the 'hamſters, and take poſſeſſion of their holes.

'The hamſters are commonly brown on the 'back, and white on the belly. Some of them, 'however, are gray; and this difference may 'be the effect of advanced age. Some of them 'are alſo totally black.'

Like the mulet, or long-tailed field mouſe, the hamſters mutually deſtroy each other. Of two kept in a cage, the female killed the male in one night, and, after cutting the muſcles which fix the jaws to each other, devoured a part of the inteſtines. They produce ſeveral times in the year, and are ſo deſtructive, that, in the ſtates of Germany, a price is ſet upon their heads. They are ſo numerous in that part of the Continent, that their fur is a conſiderable article of commerce.

All theſe facts, which we have extracted from the memoir of M. Waitz, and the remarks

of

of M. de Montmirail, appear to be certain, and correſpond with our other ſources of information concerning the hamſters. But it is not equally certain, as mentioned in the ſame memoir, that they remain in a torpid ſtate during the winter, and revive in the ſpring. The hamſter which we kept laſt winter (1762-3) in an apartment without fire, and where the cold frequently congealed water, never became torpid, but moved about and eat its ordinary food. But ſeveral kinds of dormice, which were likewiſe in our poſſeſſion, became torpid in a much ſmaller degree of cold. Hence the hamſter neither approaches the dormice nor marmot by this character; and ſome of our naturaliſts have improperly called it the *marmot of Straſburg*, though it ſleeps not like the marmot, nor is found in the neighbourhood of Straſburg.

SUPPLEMENT.

IN the *Gazette de Littérature*, of the 13th of September 1774, we find the following obſervations concerning the hamſter, extracted from a German publication by M. Sulzer.

'The corn-rat, in German *hamſter*, cannot be 'more commodiouſly deſcribed than at Gotha, 'where, in one year, 11574 ſkins of it, in ano-'ther,

'ther, 54429, and, in a third, 80,139, have been 'brought to the town-houſe. In general, this 'animal inhabits temperate countries. When 'irritated, its heart beats 180 times in a minute. 'The weight of the body is to that of the brain 'as 1 to 193.

'Theſe animals lay up magazines which often 'conſiſt of twelve pounds of grain. In winter, 'the female ſinks very deep in the earth. The 'male is a bold animal, and defends himſelf 'againſt dogs, cats, and men. He is naturally 'quarrelſome, agrees not with his own ſpecies, 'and ſometimes, in a tranſport of fury, ſlays his 'own family. He devours the feeble indivi-'duals of his ſpecies, as well as mice and birds; 'and yet he feeds upon all kinds of herbs, 'fruits, and ſeeds. He drinks little; and the 'female remains longer in her winter retreat 'than the male. The former goes four weeks 'with young, and often produces ſix at a litter. 'In a few months, the females become fertile. 'The rat called *Iltis* * kills the hamſter.

'When this animal is in a torpid ſtate, neither 'reſpiration, nor any kind of feeling, can be 'perceived. The heart, however, beats fifteen 'times in a minute, which is diſcovered by 'opening the cheſt. The blood continues to be 'fluid, and the inteſtines are not irritable. Even

* The *Iltis* is the polecat, and not a rat, as this author alledges.

'an

'an electrical ſhock does not awake him: In 'the open air, he is never reduced to a torpid 'ſtate.'

M. Sulzer mentions the gradual manner in which this animal recovers his vigour and activity.

'The utility of the hamſter is confined to the 'deſtruction of mice; but he himſelf is much 'more miſchievous *.'

We wiſh that M. Sulzer had marked the preciſe degree of cold, or want of air, which renders theſe animals torpid; for we ſtill maintain, what was formerly remarked, that a hamſter confined in a cage, and in a room where water froze, was not reduced to a torpid ſtate during the winter 1763. This fact will receive additional confirmation from the following obſervations of M. Allamand, which he has publiſhed at the end of the Dutch edition of my work.

Addition to the Hiſtory of the HAMSTER, *by* M. ALLAMAND.

THE hamſter is a quadruped of the mouſe kind, which ſleeps during the winter, like the marmots. The legs and neck are ſhort; the head is thickiſh; and the mouth is garniſhed

* Obſervat. ſur le Rat de Blé, par M. Sulzer; *Gazette de Littérature*, 13 *Sept.* 1774.

on

on each ſide with whiſkers. The ears are large and almoſt naked. The tail is ſhort, and one half of it naked. The eyes are round and prominent. The colour of the hair is a mixture of red, yellow, white, and black. Theſe characters exhibit not the moſt alluring picture; and the manners of the animal are ſtill more diſguſting. He has no love but for himſelf, and poſſeſſes not a ſingle ſocial quality. He attacks and devours every animal he is capable of conquering, not excepting his own ſpecies. Even the inſtinct which draws him to the other ſex, laſts only a few hours; at the end of which the female would not meet with a better fate, if ſhe did not take the precaution of avoiding, or of killing him firſt. To theſe odious qualities, however, Nature has joined others, which, without rendering him more amiable, make him deſerve a diſtinguiſhed rank in the hiſtory of animals. He belongs to the ſmall number of thoſe which paſs the winter in a torpid ſtate, and he is the only European animal that is provided with cheek-pouches. His addreſs in making a ſubterraneous abode, and the induſtry with which he lays up proviſions, merit the attention of the curious.

The hamſter inhabits not all ſoils or climates indifferently. He is neither found in very warm nor in very cold countries. As he lives upon grains, and dwells under the earth, ſtony, ſandy, or

or argillaceous ſoils are as inconvenient to him as meadows, foreſts, and marſhy grounds. He requires a ſoil which is eaſily pierced, and yet ſo tenacious as not to tumble down. He likewiſe chooſes countries which abound in all kinds of grain, that he may not be obliged to ſeek his food at great diſtances, for which he is not well qualified. In Thuringia, the ſoil of which poſſeſſes all theſe qualities, the hamſters are more numerous than in any other country.

The habitation which the hamſter digs to the depth of three or four feet, conſiſts of more or fewer apartments, according to the age of the animal. The principal chamber is lined with ſtraw, and ſerves him for a lodging. The others are deſtined for the preſervation of proviſions, of which he amaſſes great quantities during the autumn. Each hole has two apertures; the one deſcends obliquely, and the other, through which the animal goes out and in, is perpendicular.

The holes of the females, who never live with the males, are ſomewhat different. In thoſe where ſhe brings forth, there is ſeldom above one chamber for proviſions; becauſe the ſhort time the young remain with her requires not a great ſtore of food. But, inſtead of one perpendicular hole, ſhe makes ſeven or eight, to give free paſſage to her young. Sometimes the mother baniſhes her offſpring, and continues to poſſeſs this hole; but ſhe commonly digs another,

and

and lays up as much proviſions as the ſeaſon permits her to collect.

The hamſters copulate about the end of April, when the males enter the apartments of the females, where they remain only a few days. If two males happen to meet in the ſame hole, a furious combat enſues, which generally terminates in the death of the weakeſt. The conqueror takes poſſeſſion of the female, and both, though at every other period they perſecute and kill each other, lay aſide their natural ferocity during the few days their amours continue. They even mutually defend each other againſt aggreſſors. When a hole is opened at this period, and the female perceives that her huſband is about to be carried off, ſhe darts upon the raviſher, and makes him feel the fury of her vengeance, by inflicting deep and painful wounds.

The females bring forth twice or thrice every year. Their litter is never fewer than ſix, and oftener from ſixteen to eighteen. The growth of theſe animals is very rapid. At the age of fifteen days, they already begin to dig the earth. Soon after, the mother baniſhes them from her habitation; ſo that, at the age of about three weeks, they are abandoned to their own management. The mother, in general, diſcovers little tenderneſs for her offspring. She who, in the ſeaſon of love, defends her huſband with courage, flies in the moſt daſtardly manner when her family is threatened with danger. Her only

ſolicitude

ſolicitude is to provide for her own ſafety. With this view, when purſued, ſhe digs deeper into the earth, which ſhe performs with an amazing quickneſs. The young would willingly follow her; but ſhe is deaf to their cries, and even ſhuts the hole which ſhe had made.

The hamſter feeds upon all kinds of herbs, roots, and grains, which the different ſeaſons produce. He even eats the fleſh of ſuch animals as he can conquer. As he is not adapted for long journies, his magazine is firſt ſtocked with the proviſions which are neareſt his abode. This is the reaſon why ſome of his chambers are frequently filled with one kind of grain only. When the harveſt is reaped, he goes to a greater diſtance in queſt of proviſions, and carries every article he can find, without diſtinction, to his granary. To facilitate the tranſportation of his food, Nature has furniſhed him with two pouches in the inſide of each cheek. On the outſide, theſe pouches are membranous, ſmooth, and ſhining; and, in the inſide, there are a great many glands, which continually ſecrete a certain fluid, to preſerve their flexibility, and to enable them to reſiſt any accidents which may be occaſioned by the roughneſs or ſharpneſs of particular grains. Each of theſe cheeks is capable of containing an ounce and a half of grain, which, on his return to his habitation, he empties, by preſſing his two fore feet againſt his cheeks. When we meet a hamſter having his cheeks filled with

with proviſions, it is eaſy to ſeize him with the hand, without the riſk of being bitten; becauſe, in this condition, he has not the free motion of his jaws. But, if he is allowed a little time, he ſoon empties his pouches, and ſtands upon his defence. The quantity of proviſions found in the holes depends on the age and ſex of the inhabitant. The old hamſters often amaſs a hundred pounds of grain; but the young and the females content themſelves with a quantity much ſmaller. Their object in laying up proviſions is not to nouriſh them during the winter, which they paſs in ſleep and without eating, but to ſupport them after they awake in the ſpring, and previous to their falling into a torpid ſtate.

At the approach of winter, the hamſters retire into their ſubterraneous abodes; the entry to which they ſhut up with great addreſs. There they remain in perfect tranquillity, and feed on their proviſions, till the froſt becomes ſevere, when they ſink into a torpid ſtate, which reſembles a profound ſleep. When, during this period, the holes are opened, which we know by a ſmall eminence of earth raiſed near the oblique paſſage formerly deſcribed, we find the hamſter lying upon a bed of ſoft ſtraw. His head is bended under his belly, between the two fore legs, and thoſe behind reſt upon his muzzle. The eyes are ſhut; and, when the eye-lids are forced open, they inſtantly cloſe again. The members are ſtiff, like thoſe of a dead animal,

and the whole body feels as cold as ice. Neither reſpiration nor any other ſign of life can be perceived. When diſſected in this ſituation, we ſee the heart alternately contracting and dilating. But this movement is ſo ſlow, that the pulſations exceed not fifteen in a minute; though, when the animal is awake, the heart beats a hundred and fifty ſtrokes during the ſame time. The fat has the appearance of being coagulated. The inteſtines are as cold as the external parts of the body, and diſcover not the ſmalleſt irritability upon the application of ſpirit of wine or oil of vitriol. During this operation, the animal ſeems to feel very little. He ſometimes opens his mouth, as if he wanted to reſpire. But his lethargy is too ſtrong to admit of his wakening entirely.

The lethargy of the hamſter has been aſcribed ſolely to a certain degree of cold: This may be true with regard to the dormice and bats. But experience proves, that, in order to render the hamſter torpid, he muſt alſo be excluded from all communication with the external air: For, when a hamſter is ſhut up in a cage filled with earth and ſtraw, and expoſed in winter to a degree of cold ſufficient to freeze water, he never becomes torpid. But, when the cage is ſunk four or five feet under ground, and well ſecured againſt the acceſs of air, at the end of eight or ten days he is equally torpid as if he had been in his own burrow. If the cage is brought up

to

to the ſurface, the hamſter will awake in a few hours, and reſume his torpid ſtate when put below the earth. This experiment may be repeated with the ſame ſucceſs, as long as the froſt continues. We have a farther proof that the abſence of the air is one of the cauſes of torpidneſs in the hamſter: When brought up from his hole, in the coldeſt weather, and expoſed to the air, he infallibly awakes in a few hours. This experiment ſucceeds equally either in the night or day, which proves that the light forms no part of the cauſe.

It is curious to obſerve the hamſter paſſing from a torpid to an active ſtate. He firſt loſes the rigidity of his members, and then makes a profound reſpiration, but at long intervals. His legs begin to move, he opens his mouth, and utters diſagreeable and rattling ſounds. After continuing theſe operations for ſome time, he opens his eyes, and endeavours to raiſe himſelf on his legs. But all theſe movements are ſtill reeling and unſteady, like thoſe of a man intoxicated with liquor. He, however, reiterates his efforts, till he is enabled to ſtand on his legs. In this attitude he remains fixed; as if he meant to reconnoitre, and repoſe himſelf after his fatigues. But he gradually begins to walk, to eat, and to act in his uſual manner. This paſſage, from a torpid to an active ſtate, requires more or leſs time, according to the temperature of the air. When expoſed to a cold air, he ſometimes

requires more than two hours to awake, and, in a more temperate air, he accompliſhes his purpoſe in leſs than one hour. It is probable that this change is produced imperceptibly, when the animal is in his hole, and that he feels none of the inconveniencies which ariſe from a ſudden and forced reviviſcence.

The life of a hamſter is divided between the neceſſary cares of ſatisfying his natural appetites, and the fury of combating. He ſeems to have no other paſſion but that of rage, which induces him to attack every animal that comes in his way, without attending to the ſuperior ſtrength of the enemy. Ignorant of the art of ſaving himſelf by flight, rather than yield, he allows himſelf to be beat to pieces with a ſtick. If he ſeizes a man's hand, he muſt be killed before he quits his hold. The magnitude of the horſe terrifies him as little as the addreſs of the dog, which laſt is fond of hunting him. When the hamſter perceives the dog at a diſtance, he begins with emptying his cheek-pouches, if they happen to be filled with grain. He then blows them up ſo prodigiouſly, that the ſize of the head and neck greatly exceeds that of the reſt of the body. In fine, he raiſes himſelf on his hind legs, and, in this attitude, darts upon the enemy. If he catches hold, he never quits it but with the loſs of his life. But the dog generally ſeizes him behind, and ſtrangles him. This ferocious temper prevents the hamſter from being at

peace

Plate CCXXIII.

HAMSTER.

peace with any other animal. He even makes war againſt his own ſpecies, not excepting the females. When two hamſters rencounter, they never fail to attack each other, and the ſtronger always devours the weaker. A combat between a male and a female commonly laſts longer than between two males. They begin by purſuing and biting each other; then each of them retires to a ſide, as if to take breath; a little after, they renew the combat, and continue to fly and to fight till one of them falls. The vanquiſhed uniformly ſerves for a repaſt to the conqueror.

The BOBAK*, and other MARMOTS.

THE hamſter has been called the *Straſbourgh marmot*, and the bobak the *Poliſh* marmot. But it is equally certain that the hamſter is not a marmot, as it is probable that the bobak does belong to that ſpecies; for the bobak differs from the Alpine marmot only in the colour of his hair, which, inſtead of brown, is a pale yellow. He has alſo a thumb, or rather a claw on the fore feet; while the marmot has only four toes and no thumb. In every other article, the reſemblance is perfect; from which it is to be preſumed, that theſe two animals are not diſtinct ſpecies. The ſame obſervation applies to the *monax*, or *marmot of Canada*, which by ſome travellers has been called the *whiſtler*. He ſeems to differ from the marmot only by the tail, which is longer, and more buſhy. Hence the monax of Canada, the bobak of Poland, and the Alpine marmot, appear to be the ſame animal, which, from the influence of different cli-

* *Boback*; the Poliſh name of this animal.

Bobak; *Rzackzinſki, Hiſt. Nat. Pol. p.* 233. *Idem Auct. p.* 327.

Glis flavicans capite rufeſcente. . . . . Marmota Polonica; *Briſſon, Regn. Anim. p.* 165.

mates,

mates, have undergone the varieties formerly mentioned. As this ſpecies prefers the coldeſt and moſt mountainous regions, and as it is found in Poland, Ruſſia, and other parts of the North of Europe, it is not ſurpriſing that it ſhould likewiſe be found in Canada, where it is only ſmaller *. Neither is this circumſtance peculiar to the marmot; for all the animals common to both Continents are ſmaller in the New than in the Old World.

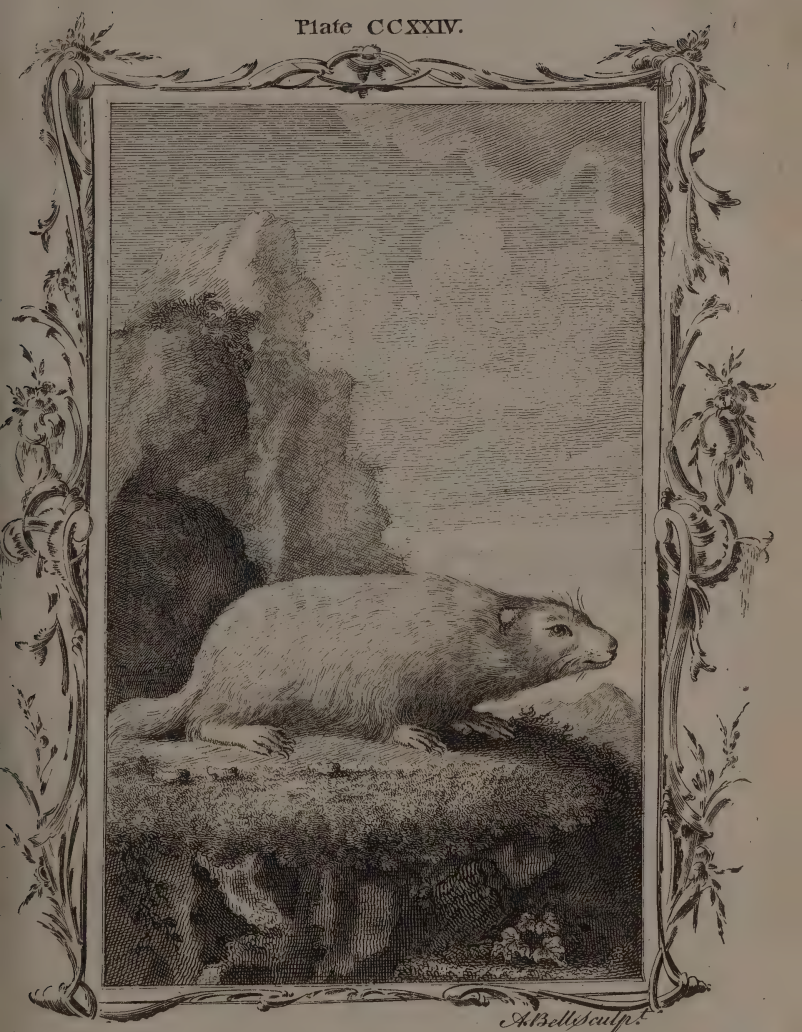
The Siberian animal, which the Ruſſians call *Jevraſchka*, is a ſpecies of marmot ſtill ſmaller than the Canadian monax. It has a round head, and a blunt noſe. It has no external ears, and the auditory paſſages can only be diſcovered by removing the hair. The length of the body, including the head, exceeds not a foot; and the tail, which is round near the body, then flat, and truncated at the extremity, is but three inches long. The body of this animal is pretty thick, the hair is yellow, mixed with gray, and that on the end of the tail is almoſt black. The legs are ſhort, thoſe before being ſomewhat longer than thoſe behind. The hind feet have five toes and five black claws, which are a little crooked; and the fore feet have only four. When theſe animals are irritated, or attempted to be

* The Alpine and Poliſh marmots are a foot and a half long from the extremity of the muzzle to the origin of the tail; but the monax, or Canadian marmot, exceeds not fourteen or fifteen inches in length.

ſeized, they bite violently, and ſet up a ſharp cry like the marmot. When they eat, they ſit on their buttocks, and carry the victuals to their mouths with the fore paws. They come in ſeaſon in ſpring, and bring forth in ſummer. The litter is generally five or ſix. They dig holes in the earth, where they paſs the winter, and where the female brings forth and ſuckles her young. Though they have a great reſemblance to the marmot, yet they appear to be of a different ſpecies; for, in the ſame parts of Siberia, there are genuine Poliſh or Alpine marmots, which the natives call *ſurok* *; and it has never been remarked that the two kinds mix, or produce an intermediate race.

* Voyage de Gmelin, tom. ii. p. 444. — In Tartary, ſays Rubruquis, there are plenty of marmots, which are called *ſogur*. In winter they aſſemble together, to the number of twenty or thirty, in a large hole, where they ſleep during ſix months; *Voyages en Tartarie, p.* 25.

Plate CCXXIV.



BOBAK.

THE JERBOAS.

JERBOA is a generic name employed to denote thoſe animals which are remarkable for the diſproportion between the hind and fore legs, the latter not exceeding the length of a mole's paws, and the former reſembling the legs of a bird. In this genus, we are acquainted with four ſpecies, or diſtinct varieties: 1. The Tarſier, or woolly Jerboa, formerly mentioned, which is certainly a particular ſpecies, becauſe it has five toes on each foot, like thoſe of a monkey. 2. The Jerboa, properly ſo called *, which has

* The Egyptian Jerboa, with thin, erect, and broad ears, full and dark eyes, and long whiſkers. The fore legs are an inch long, with five toes on each, the inner, or thumb, being ſcarce apparent; but that, as well as the reſt, furniſhed with a ſharp claw. The hind legs are two inches and a quarter long, thinly covered with hair, and exactly reſembling thoſe of a bird; three toes on each foot, covered above and below with hair: The middle toe is the longeſt, and on each is a pretty long ſharp claw. The length from noſe to tail, is ſeven inches and one quarter; the tail ten inches, terminated with a thick black tuft of hair; the tip white. The reſt of the tail is covered with very ſhort coarſe hair. The upper part of the body is thin, or compreſſed ſidewiſe. The part about the rump and loins is large. The head, back, ſides, and thighs, are covered with long hair, aſh-coloured at the bottom, and pale tawny at the ends. The breaſt and belly are whitiſh, and the hair long and ſoft. *Pennant's Synopſ. of Quad. p.* 295.

Μυς ὄνους; *Theophr. opuſc. p.* 295. *Ælian. Hiſt. Anim. lib.* x. *c.* 26.

Mus

has four toes on the fore feet, and three on the hind. 3. The alagtaga *, whoſe legs are conſtructed like thoſe of the jerboa, but which has

Mus bipes Plinii; *Lib.* xv. *c.* 65.

Jerboa or *Yerboa*, the Arabian name of this animal; *Shaw's Travels, p.* 248. *Texeira's Travels, p.* 21.

Gerbua; *Edwards's Gleanings, p.* 219. *Plaidſted's Journal, p.* 59.

Mus jaculus, cauda elongata floccoſa, palmis ſubpentadactylis, femoribus longiſſimis, brachiis breviſſimis; *Linn. Syſt. Nat. p.* 86. *Haſſelquiſt, p.* 198.

Gerboiſe; *Voyage de Paul Lucas, tom.* ii. *p.* 73.

* Siberian jerboa, with very long tranſparent narrow ears, long whiſkers, and five toes on the fore feet, three on the hind feet, pointing forward, and a fourth behind, about an inch above the heel. The colour of the upper part of the body is tawny, and of the lower whitiſh. In form of body, legs, and tail, it agrees with the Egyptian jerboa; *Pennant's Synopſ. of Quad. p.* 296.

Alagtaga is the Tartarian name of this animal, which, according to Meſſerchmid, ſignifies *an animal which cannot walk*. The word *alagtaga*, however, appears to be nearly the ſame with *letaga*, which is applied to the flying ſquirrel. Hence, I am inclined to believe, that *alagtaga*, as well as *letaga*, are generic rather than ſpecific names, and that they denote a *flying animal*, eſpecially as Strahlenberg, quoted by Gmelin, calls this animal the *flying hare*.

Cuniculus ſeu lepus Indicus, *utias* dictus; *Aldrov. de Quad. digit. fig. p.* 395.—*Nota*, 1. Linnæus and Edwards have improperly referred this figure to the jerboa, though, by the ſpur or fourth toe on the hind feet, which is very conſpicuous, it belongs to the ſpecies of alagtaga. *Nota*, 2. Aldrovandus was wrong in denominating this animal *utias*, which is an American word, and probably the ſame with agouti.

Cuniculus pumilio ſaliens, cauda longiſſima; *Gmelin. Nov. Com. Acad. Petrop. tom.* v. *tab.* 11. *fig.* 1.

Cuniculus pumilio ſaliens, cauda anomala longiſſima; *Briſſ. Quad. p.* 103.

Flying hare; *Strahlenberg*; *Hiſt. Ruſſ. p.* 370.

five

five toes on the fore feet and three on the hind, with a spur, that may pass for a thumb or fourth toe, much shorter than the others. 4. The *Daman Israel* *, or *lamb of Israel*, which may be the same animal called *Mus longipes* by Linnæus †, and which has four toes on the fore feet, and five on those behind.

The head of the jerboa has a great resemblance to that of the rabbit; but its eyes are larger, and its ears shorter, higher, and broader, in proportion to its size. The nose is flesh-coloured and naked; and the muzzle is thick and short. The opening of the mouth is very small; the upper jaw is very broad, and the under narrow and short. The teeth are like those of the rabbit; and the whiskers round the mouth are composed of long black and white hairs. The fore feet are extremely short, and never touch the ground, being used only as hands to convey victuals to the mouth. These hands have four fingers, armed with claws, and the rudiments of a fifth without any claw. The hind feet have

* *Daman Israel*, lamb of the children of Israel; *Shaw's Travels*.

Animal quoddam pumilo cuniculo non dissimile, sed cuniculis majus quod *agnum filiorum Israel* nuncupant; *Prosp. Alpin. Hist. Ægypt. lib.* iv. *cap.* 9. 232.

† Mus longipes, cauda elongata vestita, palmis tetradactylis, plantis pentadactylis, femoribus longissimis; *Linn. Syst. Nat. p.* 84. The word *femoribus* is here improperly applied; for the metatarsi, or first bones of the foot alone, are extremely long in this animal.

only

only three toes, of which the middle one is longeſt, and all three are armed with claws. The tail is three times longer than the body; it is covered with ſmall ſtiff hairs, of the ſame colour with thoſe on the back, and the extremity of it is garniſhed with longer, ſofter, and more buſhy hair. The legs are naked and fleſh-coloured, as well as the noſe and ears. The top of the head and back are covered with reddiſh hair, and the flanks, the under part of the head, the throat, the belly, and the inſide of the thighs, are white: Below the reins and near the tail there is a large, black, tranſverſe band, in the form of a creſcent*.

The alagtaga is ſmaller than a rabbit. His ears are long, broad, naked, thin, tranſparent, and ſpread over with very conſpicuous blood-veſſels. The upper jaw is much larger than the under, but blunt and pretty broad at the extremity. It has large whiſkers round the mouth. The teeth are like thoſe of a rat. The eyes are large; and the iris and pupils are brown. The body is narrow before, broad and almoſt round behind. The tail is very long, not ſo thick as a ſmall finger, and two thirds of it are covered with ſhort ſtiff hair; on the laſt third the hairs are longer, more buſhy, ſofter, and become longer toward

* The following are the dimenſions of this animal, as meaſured by Haſſelquiſt: Magnitudo corporis ut in mure domeſtico majore. Menſuratio capit. poll. 1 corp. poll. $2\frac{1}{2}$ caud. ſpith. $1\frac{1}{2}$ poſt. ped. ſpith. $\frac{1}{2}$ anter. infra pollicem. Myſt. longiſſ. poll. 3.

the extremity, where they form a kind of tuft, which is black at the beginning, and white at the end. The fore feet are very ſhort, and have five toes; thoſe behind are very long, and have only four toes, three of which are placed before, and the fourth, which is a thumb, ſtands at a diſtance from the others. All theſe toes are armed with claws, which are ſhorter in the fore than in the hind feet. The hair of this animal is ſoft, pretty long, yellow on the back, and white on the belly *.

From comparing theſe two deſcriptions, the firſt of which is taken from Edwards and Haſſelquiſt, and the ſecond from Gmelin, it appears that the jerboa and alagtaga reſemble each other in a ſtriking manner. The jerboa is only ſmaller than the alagtaga, and has but four toes on the fore feet, and three on the hind, without any ſpur; while the alagtaga has five toes on the fore feet, and three and a ſpur on the hind feet. But I ſuſpect that this difference is not conſtant; for Dr. Shaw, who has given a figure and deſcription of a Barbary jerboa, repreſents it with

* The following are the dimenſions of this animal, as meaſured by Gmelin: Longitudo ab extremo roſtro ad initium caudæ poll. 6; ad oculos poll. 1. Auricularum poll. 1 ½; caudæ poll. 8 ½; pedum anteriorum ab humero ad extremos uſque digitos poll. 1 ½ pedum poſteriorum a ſuffraginibus ad initium uſque calcanei poll. 3; a calcaneo ad exortum digiti poſterioris poll. 1; ab exortu digiti poſterioris ad extremos ungues poll. 2. Latitudo corporis anterioris poll. 1 ½ poſterioris poll. 3. auricularum poll. ½.

a ſpur

a ſpur or fourth toe on the hind feet; and Mr. Edwards remarks, that he carefully examined two jerboas which he ſaw in England, and could diſcover no ſpur. Hence this character, which might ſerve as a ſpecific diſtinction between the jerboa and alagtaga, by not being conſtant, anſwers no purpoſe, but marks rather the identity than the diverſity of the ſpecies. Neither does the difference in ſize prove them to be diſtinct ſpecies: Edwards and Haſſelquiſt may have deſcribed only young jerboas, and Gmelin an old alagtaga.

Two circumſtances, however, render this matter ſtill doubtful; the proportion of the tail, which is much larger in the jerboa than in the alagtaga, and the difference of the climates which they inhabit. The jerboa is common in Circaſſia *, Egypt †, Barbary, and Arabia; and the alagtaga in Tartary, along the Wolga, and as far as Siberia. It is ſeldom that the ſame animal inhabits climates ſo different; and, when it does

* In Circaſſia, Perſia, Arabia, and the environs of Babylon, there is a kind of field-mouſe, called *jerbuach* in the Arabic language, which is nearly of the ſize and colour of the ſquirrel.—— When it leaps, it darts five or ſix feet above the ground.—— It ſometimes quits the fields, and takes up its abode in the houſes; *Voyage d' Olearius, p.* 177.

† In Egypt, I ſaw two ſmall animals, that ran very quickly on their hind feet, which were ſo long that the creatures ſeemed to be mounted on ſtilts. Theſe animals burrow like rabbits. I carried off ſeven of them; two of which I brought to France, where they lived in the royal menagery two years; *Voyage de Paul Lucas, tom.* ii. *p.* 74.

happen, the ſpecies undergoes great changes: This we preſume to be the caſe with the jerboa, of which, notwithſtanding theſe differences, the alagtaga ſeems to be only a variety.

Theſe animals generally conceal their hands or fore feet among the hair; ſo that, at firſt ſight, they ſeem to have only two feet. In tranſporting themſelves from place to place, they do not walk, or advance one foot after another, but leap nimbly to the diſtance of three or four feet. When repoſing themſelves, they ſit on their knees, and ſleep only during the day. They eat grain and herbage, like the hare. Their diſpoſitions are mild, and yet they can never be tamed beyond a certain point. They dig holes in the earth like the rabbits, and in a much ſhorter time. About the end of ſummer, they lay up herbage in their magazines, where, in cold countries, they paſs the winter.

As we have had no opportunity of diſſecting this animal, we ſhall ſubjoin the remarks of M. Gmelin upon its internal ſtructure *.

With

* Œſophagus, uti in lepore et cuniculo, medio ventriculo inſeritur; inteſtinum cæcum breve admodum ſed amplum eſt, in proceſſum vermiformem, duos pollices longum abiens. Choledochus mox infra pylorum inteſtinum ſubit. Veſica urinaria citrina aqua plena; uteri nulla plane diſtinctio; vagina enim canalis inſtar ſine ullis artificiis in pubem uſque protenſa in ano mox cornua dividitur, quæ ubi ovariis appropinquant multas inflexiones faciunt, et in ovariis terminantur. Penem maſculus habet ſatis magnum, cui

With regard to the daman, or lamb of the children of Iſrael, which ſeems to be a kind of jerboa, becauſe its fore legs are remarkably ſhorter than the hind, having never ſeen this animal, we cannot do better than copy the remarks of Dr. Shaw, who had an opportunity of comparing it with the jerboa, and ſpeaks of them as two diſtinct ſpecies. 'The daman,' ſays this author, 'is likewiſe an animal of Mount Libanus, though common in other places of this country. It is a harmleſs creature, of the ſame ſize and quality with the rabbit; and with the like incurvating poſture and diſpoſition of the fore teeth. But it is of a browner colour, with ſmaller eyes, and a head more pointed, like the marmots. The fore feet likewiſe are ſhort, and the hinder are nearly as long in proportion as thoſe of the jerboa. Though this animal is known to burrow ſometimes in the ground; yet, as its uſual reſidence and refuge are in the holes and clifts of the rocks, we have ſo far a more preſumptive proof, that this creature may rather be the ſaphan of the Scriptures, than the jerboa. I could not learn why it was called da-

cui circa veſicæ urinariæ collum veſiculæ ſeminales unciam cum dimidio longæ, graciles, et extremitatibus intortæ adjacent. Foramen aut ſinus quoſdam inter anum et penem, aut inter anum et vulvam nullo modo potui diſcernere, licet quaſvis in indagatione iſta cautelas adhibuerim. —— Cuniculi Americani, porcelli pilis et voce Marcgr. Fabrica internarum partium ab hoc animali non multum abludunt; *Gmelin, Nov. Com. Petrop. tom.* v. *art.* 7.

man

man Iſrael, *i. e.* Iſrael's lamb, as theſe words are interpreted *.' Proſper Alpinus, who mentioned this animal before Dr. Shaw, ſays, that its fleſh makes excellent eating, and that it is larger than the European rabbit. But this laſt fact ſeems to be ſuſpicious; for Dr. Shaw has omitted this paſſage of Proſper Alpinus, though he tranſcribes all the other remarks of that author.

* Shaw's Travels, p. 248.

THE ICHNEUMON*.

IN Egypt, the ichneumon is domeſtic like the cat in Europe, and preys upon mice and rats.

* Ichneumon weaſel, with bright flame-coloured eyes, ſmall rounded ears, almoſt naked, noſe long and ſlender, and the body thicker than that of others of this genus. The tail is very thick at the baſe, tapering to a point. The legs are ſhort; and the hair is hard and coarſe. The colour varies in different animals from different countries; in ſome it is alternately barred with dull yellowiſh, brown, and white; in others, pale brown and mouſe-coloured; ſo that the animal appears mottled. The throat and belly are of a uniform brown. Beneath the tail is an orifice, not unlike that of a badger. It differs in ſize, from twenty-four to forty-two inches in length, from the tip of the noſe to the end of the tail; *Pennant's Synopſ. of Quad. p.* 226.

Ιχνευμων; *Ariſt. Hiſt. Anim. lib.* ix. *c.* 6. *Oppian. Cyneg.* iii. 401.

Ichneumon; *Plin. lib.* viii. *c.* 24.

L'Ichneumon que les Egyptiens nomment Rat de Pharaon: *Belon. Obſ. p.* 95. *Proſp. Alpin. tom.* i. *p.* 234. *Geſner. Quad. p.* 566. *Raii Syn. Quad. p.* 202. *Shaw's Travels, p.* 249. 376.

Muſtela Egyptiaca; *Klein. Quad. p.* 64.

Meles ichneumon, digitis mediis longioribus, lateralibus æqualibus, unguibus ſubuniformibus; *Haſſelquiſt, Itin. p.* 191.

Ichneumon; Mus Pharaonis vulgo; *Briſſon. Quad. p.* 181.

Viverra ichneumon, cauda e baſi incraſſata, ſenſim attenuata, pollicibus remotiuſculis; *Lynn. Syſt. Nat. p.* 63.

Quil, vel quiſpelé; *Garcia Arom. p.* 214. *Raii Synopſ. Quad. p.* 197.

Viverra mungo; *Koempfer Amoen. p.* 574.

De Monghos; *Valentin. Amboin.*

Serpenticida,

rats *. But his appetite for flesh is still more violent, and his instinct more extensive, than those of the cat; for he hunts and eats with equal avidity, birds, quadrupeds, serpents, lizards, insects, and, in general, every animated being. His courage is equal to the vehemence of his appetite. He dreads neither the rage of the dog nor the malice of the cat. He is not afraid even of the bite of serpents, which he pursues and kills; and, when he begins to feel the effects of their poison, he goes in quest of an antidote, and particularly of a root †, which the Indians

Serpenticida, sive Moncus; *Rumph. Herb. Amboin. App. p.* 69. *tab.* 28.

Indian Ichneumon; *Edwards, p.* 199.

Ichneumon, seu vulpecula Ceilonica; *Seb. Mus. tom.* i. *p.* 66. *tab.* 41. *fig.* 1.

La Mangouste; *Buffon.*

Viverra Indica, ex griseo rufescens; *Brisson. Quad. p.* 177. *Raii Syn. Quad. p.* 198.

Ichneumon, sive lutra Egypti; *Aldrov. de Quad. Digit. p.* 298.

* Mihi ichneumon fuit utilissimus ad mures ex meo cubiculo fugandos .... unum alui à quo murium damna plane cessarunt, siquidem quotquot offendebat interimebat, longeque ad hos necandos fugandosque fele est ichneumon utilior; *Prosp. Alp. Descript. Egypt. lib.* iv. *pag.* 235.

† Primum antidotum .... radix est plantæ Malaice *Hampaddu-Tanah*, id est *Fel terræ* dicta à sapore amarissimo ..... Lusitanis ibidem *Raja* seu radix *mungo* appellata à mustela quadam seu viverra Indis *munguştia* ..... appellata, quæ radicem monstrasse, et ejus usum .... prima .... prodidisse creditur .... Indi igitur .... præcipue qui Sumatram et Javam incolunt, sive usum à mustela edocti sint, sive casu quodam invenerint radicem

Indians call by his name, and alledge that it is one of the moſt powerful and certain remedies againſt the bite of the viper or aſp. He eats the eggs of the crocodile, as well as thoſe of hens and other birds. He likewiſe kills and eats the young crocodiles *, though they are very ſtrong ſoon after they iſſue from the egg; and, as fable is always a concomitant of truth, it has been alledged, that, in conſequence of this antipathy to the crocodile, the ichneumon enters into the crocodile's body while aſleep, and never leaves him till his bowels are entirely devoured.

Naturaliſts have imagined that there are different ſpecies of ichneumons, becauſe they vary

pro explorato habent antidoto; *Koempfer, Amœnit. pag.* 574.—In India, there is a root which produces neither trunk, branches, nor leaves. It is called *chiri*, a name derived from that of the animal, which alone knows where to find this root. The animal is as large as a martin, which it alſo reſembles in figure, except that it is more corpulent. It is of a duſky colour, and the hair is hard, crooked, and briſtly, like that of the wild boar, but not ſo long. The tail is fleſhy and ſmooth, like that of the martin. This animal has a remarkable antipathy to ſerpents, for whom he perpetually lies in ambuſh.——The hunters tell us, that, when bit by a ſerpent, he goes in queſt of the root mentioned above, either to cure, or to preſerve himſelf againſt the effects of the poiſon.——This root is regarded as the beſt antidote which India produces; *Voyage de P. Vincent Marie.*

* The ichneumon, or rat of Pharaoh, is a ſmall kind of wild hog. It is a beautiful animal, eaſily tamed, and its hair is briſtly, like that of the porcupine. It is an enemy to all other rats, and has a particular antipathy to the crocodile, whoſe eggs it devours, and boldly attacks the young, by ſeizing them by the tail, inſtead of the head; *Deſcript. de l'Egypte, par Maillet, p.* 34.

in

in ſize and colour. But, if we conſider that they are often reared in houſes, and muſt, like other domeſtic animals, undergo changes, we will be eaſily perſuaded, that the diverſities in colour and ſize are only ſimple varieties, and are not ſufficient to conſtitute diſtinct ſpecies; eſpecially as, in two ichneumons which I ſaw alive, and in ſeveral ſtuffed ſkins, I examined the intermediate ſhades both of colour and ſize, and remarked, that not one of them differed from the others by any evident and conſtant character. It only appears, that, in Egypt, where the ichneumons are in a manner domeſtic, they are larger than in India, where they are wild *.

The

* This ichneumon, ſays Edwards, came from the Eaſt Indies, and was very ſmall. I ſaw another which came from Egypt, and was more than double the ſize. ——Beſide the ſize, the only other difference between theſe two ichneumons was, that the Egyptian kind had a ſmall tuft at the extremity of the tail, while that of the Indian kind terminated in a point. I believe they are two diſtinct ſpecies; becauſe that of India, which was comparatively ſo ſmall, had acquired its full growth; *Edwards*, *p.* 199. *Nota*, Theſe differences are not ſufficient to conſtitute two ſpecies, eſpecially as between the largeſt and ſmalleſt, that is, from thirteen to twenty-two inches in length, there are intermediate ſizes of fifteen and ſixteen inches. Seba, who has given a figure and deſcription (*vol.* i. *p.* 66. *tab.* 41.) of one of theſe ſmall ichneumons, which he had alive, and was brought from Ceylon, remarks, that it was very miſchievous, and could not be tamed. This difference of diſpoſition might indicate a difference of ſpecies. But it has ſo perfect a reſemblance to thoſe we have already mentioned, that it is unqueſtionably the ſame animal. Beſides, I ſaw one of theſe ſmall ichneumons, which was ſo tame, that its maſter (M. le Preſident de Robien)

The nomenclators, who perpetually blunder with regard to ſpecies, have differed widely as to the ichneumon. Linnæus firſt made it a badger, and afterwards a ferret. Haſſelquiſt, following the leſſons of his maſter, likewiſe made it a badger. Klein and Briſſon have placed it among the weaſels. Others have made it an otter, and others a rat. I mention theſe notions for the ſole purpoſe of ſhowing the inconſiſtencies and contradictions that ariſe from what are called *generic names*, which are generally falſe, arbitrary, and equivocal *.

The

carried it always in his hat, and exhibited to the whole world the mildneſs and good nature of this animal.

* Haſſelquiſt finiſhes his long, dry, and unintereſting deſcription of the ichneumon with theſe words: 'Galli, in Egypto converſantes, qui omnibus rebus quas non cognoſcunt, ſua imponunt nomina ficta, appellarunt hoc animal *rat de Pharaon*. Quod ſequunti qui Latine relationes de Egypto dederunt, *Alpin*, *Belon*, murem Pharaonis effinxerunt.' If this man had read Belon and Alpinus, whom he quotes, he would have perceived that it was not the French who gave the appellation of *Pharaoh's rat* to the ichneumon, but the Egyptians themſelves, and would not, on that account, have taken occaſion to revile our nation. But it is not ſurpriſing to find petulance and pedantry in the works of a ſchool-boy. In a word, his deſcriptions of the ichneumon, of the camelopard, and of ſome other animals, can never ſerve any other purpoſe than to miſlead thoſe who take the diſagreeable and irkſome trouble of reading them: 1. Becauſe they are unaccompanied with figures, which a multitude of ill choſen words can never ſupply: 2. Becauſe theſe words are moſtly barbarous Latin, or rather no language whatever: 3. Becauſe the method obſerved in deſcriptions of this kind, is only a rote, which every man

The ichneumon loves the banks of rivers. During inundations, he retires to the high grounds, and often approaches the habitations of men in queſt of prey. In walking, he makes no noiſe, and varies his gait according to circumſtances. Sometimes he carries his head high, contracts his body, and raiſes himſelf on his limbs. At other times he has the air of creeping and of lengthening his body like a ſerpent. He often ſits on his hind legs; and ſtill more

man can follow, and requires neither genius nor knowledge: 4. Becauſe, by the minuteneſs of the deſcription, the remarkable and diſtinctive characters of the animal deſcribed are confounded with the more obſcure, unimportant, and equivocal marks: 5. In fine, becauſe the numerous relations, and precarious combinations, with which we are obliged to load the memory, render the labour of the reader greater than that of the author, and leave both as ignorant as they were before. What proves, that, in notes of this nature, neither reading nor knowledge are neceſſary, is, 1. The falſe imputation thrown on the French nation with regard to *Pharaoh's rat:* 2. The blunder he commits in aſcribing to this animal the Arabian name *Nems*, which ſignifies the ferret, and not the ichneumon. To avoid this error, an acquaintance with the Arabic language was unneceſſary; it was enough to have read the travels of thoſe who had gone before him in the ſame country: 3. The omiſſion of eſſential characters, while he enlarges without meaſure upon thoſe which are indifferent. He deſcribes, for example, the camelopard as minutely as the ichneumon; but he omits the moſt important character, namely, whether the horns are permanent, or fall off annually: Among a thouſand uſeleſs words, we find not the one which is moſt neceſſary, and from his deſcription, we cannot diſcover whether the camelopard belongs to the ſtag or ox kind. But we have dwelt too long on a criticiſm which every man of ſenſe muſt make, when works of this nature fall into his hands.

frequently darts like an arrow on his prey. His eyes are vivacious and full of fire. His aſpect is beautiful, his body very agile, his limbs ſhort, his tail thick and very long, and his hair rude, and often curled. Both male and female *, independent of the natural paſſages, have a remarkable aperture, a kind of pouch in which an odoriferous liquor is ſecreted. The ichneumon is ſaid to open this pouch in order to refreſh himſelf when too warm. His ſharp muzzle and narrow mouth prevent him from ſeizing large objects. But the defects of his weapons and ſtrength, he ſupplies by agility and courage. He eaſily worries a cat, though larger and ſtronger than himſelf. He often combats with dogs, and, however large, forces reſpect from them.

This animal grows quickly, and lives but a ſhort time †. They are numerous in all the

* The inhabitants of Alexandria rear an animal called *Ichneumon*, which is a native of Egypt. They tame and keep it in their houſes, like a cat or dog. The vulgar call it the *rat of Pharaoh*. The peaſants bring theſe animals, when young, to Alexandria, where they are kept in the houſes, on account of their hunting rats, ſerpents, &c. This animal is very cunning in watching its prey . . . . He feeds indifferently on all living creatures, as beetles, lizards, cameleons, all kinds of ſerpents, frogs, rats, and mice. He is fond of birds and poultry. When provoked, he erects his hair . . . . He has a peculiar mark, a large aperture ſurrounded with hair, near the anus, reſembling the female organ, which he opens when too warm; *Belon, Obſ. p.* 95.

† Feles et ichneumon tot numero pariunt quot canes, veſcunturque eiſdem, vivunt circiter annos ſex; *Ariſt. Hiſt. Anim. lib.* vi. *cap.* 35.

ſouthern

ſouthern regions of Aſia *, from Egypt to Java; and they appear to exiſt in Africa, as far as the Cape of Good Hope †. But they cannot be eaſily reared, or preſerved in our temperate climates. Whatever care be taken of them, the wind incommodes, and the froſt kills them. To avoid both, and preſerve their heat, they roll themſelves up, and conceal their head between their thighs. The ichneumon has a ſmall ſoft voice, a kind of murmur, and its cry never becomes ſharp unleſs when ſtruck or irritated. This animal was held in great veneration among the ancient Egyptians, and ſtill merits protection, on account of the number of noxious animals

* Mungos alunt rura calentis Aſiæ omnis, uſque ad Gangem, etiam in iis regionibus in quibus radix mungo numquam germinavit; *Koempf. Amœnit. p.* 574.—The ichneumon is a ſmall beautiful animal, ſhaped nearly like our French weaſels . . . but of a colour incomparably finer. . . . The white and black predominate; and there is a kind of red, which conſtitutes the ſhade between the two. The hair of the tail is of the ſame colour, but longer than that of the body. The head is covered with ſhort ſmooth hair. Its eyes are large, and its ears ſhort and rounded. This ichneumon was two feet and a half long from the noſe to the extremity of the tail. . . . It was brought from the kingdom of Calicut to France, in a veſſel belonging to our ſquadron. It lived five months in Paris, and became very familiar; *Curioſit. de la Nat. et de l'Art, p.* 211.

† The ichneumon is of the ſize of a cat, and ſhaped like a ſhrew-mouſe. . . . Its whole body is covered with long ſtiff hair, variegated with black, white, and yellow. This animal, which is common in the fields of the Cape, is a great deſtroyer of ſerpents and birds; *Deſcript. du Cap de Bonne-Eſperance, par Kolbe, tom.* iii. *ch.* 5.

which

which it deſtroys, and particularly the crocodiles, whoſe eggs it knows how to find, though concealed in the ſand. The crocodiles lay ſuch a number of eggs *, that their multiplication would be extremely formidable, if the ichneumon did not deſtroy them.

* The ichneumon is of great ſervice to Egypt, becauſe he deſtroys the crocodile's eggs, wherever he can meet with them. It was for this reaſon that the ancient Egyptians performed a kind of religious adoration to him; *Voyage de Paul Lucas, tom.* iii. *p.* 203.—The ancient Egyptians juſtly reverenced the ichneumon, or rat of Pharaoh. It is ſaid, that, out of four hundred eggs, which the female crocodile lays at a time, to ſave a few of them from the fury of this mortal enemy, ſhe is obliged to tranſport them to ſome ſmall iſlands, after the retiring of the Nile; *Deſcript. de l'Egypte, par Maillet, tom.* ii. *p.* 129.

Plate CCXXV.

MANGOUSTE.

THE FOSSANE*.

BY ſome travellers the foſſane is called the *Genet of Madagaſcar*, becauſe it reſembles the genet in colour, and ſome other articles. But it is conſtantly ſmaller, and has not the odoriferous pouch, which is an eſſential character of the genet. As we were uncertain as to this fact, we wrote to M. Poivre, who had ſent us a ſtuffed ſkin, and who obliged us with the following anſwers: 'Lyon, July 19, 1761. 'The foſſane which I brought from Madagaſcar 'had the manners of our martin. The inhabi-'tants of the iſland aſſured me, that the genitals 'of the male, when in ſeaſon, had a ſtrong 'odour of muſk. When the ſkin was ſtuffed at 'the royal garden, I examined it attentively, 'and could perceive no pouch or ſmell of muſk. 'I reared a ſimilar animal in Cochinchina, and 'another in the Philippine iſlands. Both of 'them were males, and they became a little fa-'miliar. They were very young, and I kept

* Foſſane weaſel, with a ſlender body, rounded ears, and black eyes. The body and legs are covered with cinereous hair, mixed with tawny. The ſides of the face are black. From the hind part of the head, towards the back and ſhoulders, four black lines extend. The ſhoulders, ſides, and thighs, are black, and the tail is annulated with black; *Pennant's Synopſ. of Quad. p.* 237.

Foſſa, or *Foſſane*, the name of this animal at Madagaſcar, which we have adopted.

'them

'them only two or three months. I found no 'pouch in the part you mentioned; and I only 'perceived that their excrements had an odour 'similar to those of our martin. They eat flesh 'and fruits; but they preferred the latter, and 'showed a decided taste for bananas, upon which 'they sprung with avidity. This animal is very 'wild, and difficult to tame. Though taken 'when young, his air and character were always 'ferocious, which seemed to be uncommon in 'an animal that feeds spontaneously on fruits. 'The eye of the fossane is a large black globe, 'which gives it a mischievous aspect.'

We rejoice in this opportunity of expressing our gratitude to M. Poivre, who, from his attachment to natural history, and his friendship to those who cultivate that science, has adorned the royal cabinet with a great number of rare and valuable articles.

It appears to us, that the animal called *Berbé* in Guiney, is the same with the fossane, and, consequently, that this species exists in Africa as well as in Asia. 'The berbé has a sharper 'muzzle and a smaller body than the cat; and 'is spotted like the civet*.' We have no animal to which these characters apply so well as to the fossane.

* Voyage en Guinée, par Bosman, p. 256.

THE VANSIRE*.

THOSE who mention this animal have taken it for a ferret, to which it has a great reſemblance. But it differs from the ferret by ſuch characters as juſtify us in conſidering it as a diſtinct ſpecies. The vanſire has twelve grinding teeth in the upper jaw, and the ferret only eight; and, though each of theſe animals has ten grinders in the under jaw, they neither reſemble one another in figure nor ſituation. Beſides, the colour of the vanſire differs from that of all other ferrets; though theſe laſt, like all domeſtic animals, vary ſo much from each other in colour, that even the male differs from the female.

To us it appears, that the animal mentioned by Seba †, under the denomination of the *Java*

* The Madagaſcar weaſel with ſhort ears. The hair on the whole body and tail is brown at the roots, and barred above with black and ferrugenous. The length, from noſe to tail, is about fourteen inches; and that of the tail, to the tip of the hairs at the end, near ten; *Pennant's Synopſ. of Quad. p.* 224.

Vanſire, derived from *vohangſhira*, the name of this animal in Madagaſcar. The province of Balta, in the kingdom of Congo, furniſhes an infinity of fine fables, called there *Inſire*; *Hiſt. Gen. des Voyages, tom.* v. *p.* 87. *Nota*, There are no fables in Congo; and the ſimilarity of the name leads us to think that the *inſire* of Congo may be the *vanſire* of Madagaſcar.

† Muſtela Javanica: Ab incolis Javæ *Koger-angan* vocatur; *Seba, vol.* i. *p.* 77. *tab.* 48. *fig.* 4.

weaſel,

weaſel, called by the natives *Koger-angan*, and afterwards, by Briſſon *, the *ferret of Java*, may be the ſame animal with the vanſire; at leaſt, it makes a nearer approach to the vanſire than any other animal. But Seba's deſcription is not ſufficiently complete to enable us to form an explicit judgment. His deſcription we have added in the notes †, that the reader may compare it with ours.

SUPPLEMENT.

THE vanſire, as formerly remarked, is a native of Madagaſcar and the interior parts of Africa. It has a great reſemblance to the ferret, except in the number and form of the teeth, and in the tail, which is much longer in the vanſire than in our ferret. We here give the figure of an animal which was tranſmitted to us from the eaſtern parts of Africa, under the denomination

* Muſtela ſupra rufa, infra diluta flavæ, cauda apice nigricante.——Viverra Javanica. Le furet de Java; *Briſſ. Regn. Anim. p.* 245.

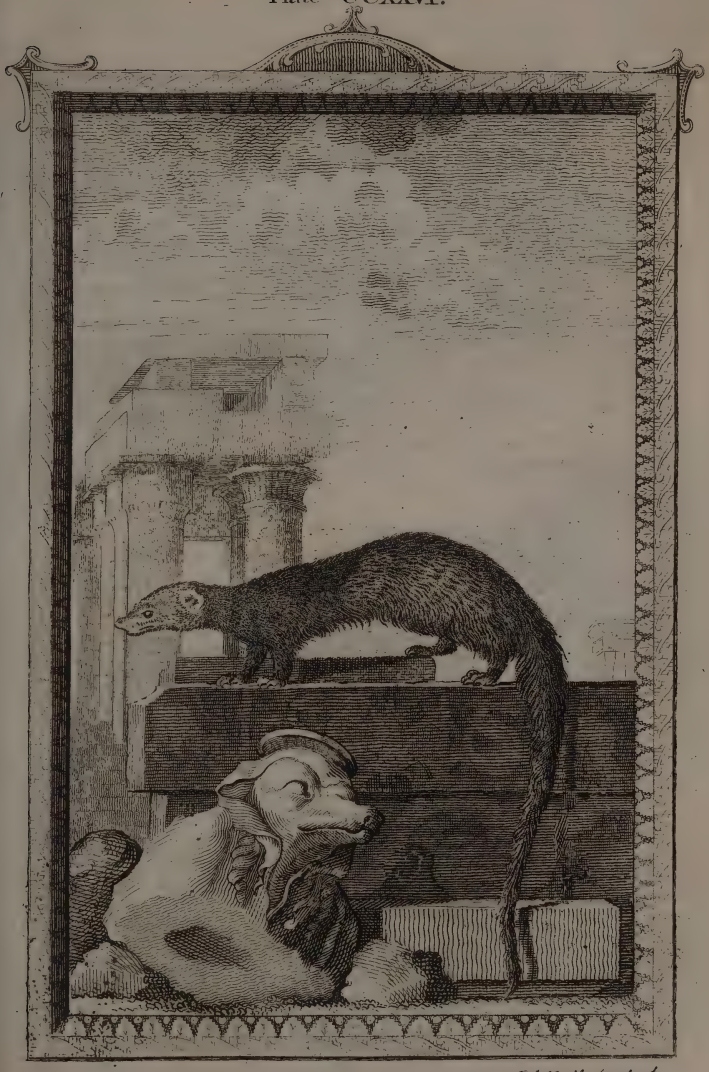
† Javanica hæc muſtela, hic repræſentata, collo et corpore eſt brevioribus quam noſtras; caput tegentes pili obſcure ſpadicei ſunt, rufi, qui dorſum, dilute vero flavi qui ventrem veſtiunt, cauda interim in apicem acutum et nigricantem deſinente; *Seba, vol.* i. *p.* 78.

of

of *Neipſe*. From its figure, as well as its name, I know it to be a ſpecies of ferret; for *nems*, or *nims*, is the name of the ferret in the Arabic language. Theſe Arabian ferrets, or *nems*, have a greater reſemblance to the vanſire than to our European ferrets. M. de Séve gives the following deſcription of the *nems*:

'The *nems*, from his figure and flexibility, is 'a genuine ferret. When he walks, he lengthens 'his body, and appears to have very ſhort legs. 'The individual under conſideration was a male, 'and about thirteen inches and a half long from 'the muzzle to the anus, and the length of the 'tail was one foot. The fore part of the body 'is five inches and a half high, and the hind 'part ſix inches and a half. The ears are naked, 'and of the ſame figure with thoſe of the com-'mon ferret. The eye is vivacious, and the co-'lour of the iris a deep yellow. The muzzle, 'which is very ſharp, appeared not to have any 'whiſkers. The whole body is covered with 'long hair, which is a mixture of dark brown 'and a dirty white, and gives it a reſemblance 'to the ſilvery rabbit. The hair on the belly is 'of a bright yellow colour, without any mix-'ture. The ground colour on the head, and 'round the eyes, is clear and yellowiſh: On the 'noſe, cheeks, and other parts of the face where 'the hair is ſhort, a tincture of brown, more or 'leſs deep, prevails without mixture, and gra-'dually loſes itſelf above the eyes. The legs

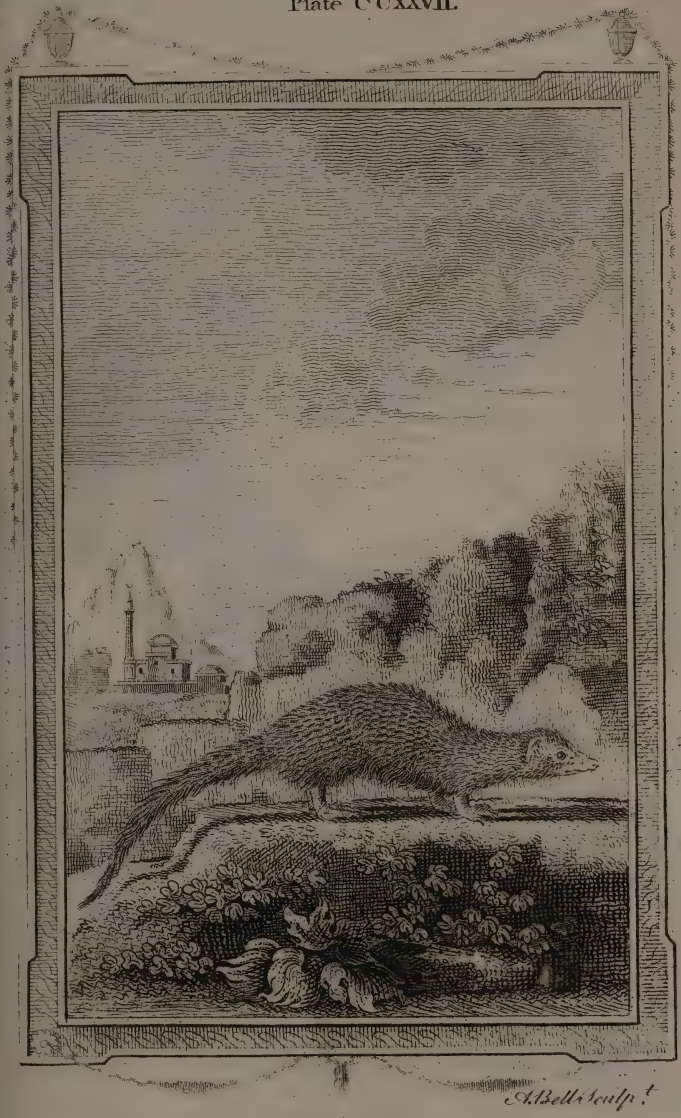
'are covered with ſhort hair, of a deep yellow 'colour. On the paws there are four toes, and 'a ſmall one behind. The claws are ſmall and 'black. The tail, which is more than double 'the length of that of our ferrets, is very thick 'at its origin, terminates in a point, and is 'covered with hair ſimilar to that on the 'body. This animal, according to the in-'formation of the boy who has the charge of 'it, never drinks.'



A.Bell Sculp.t

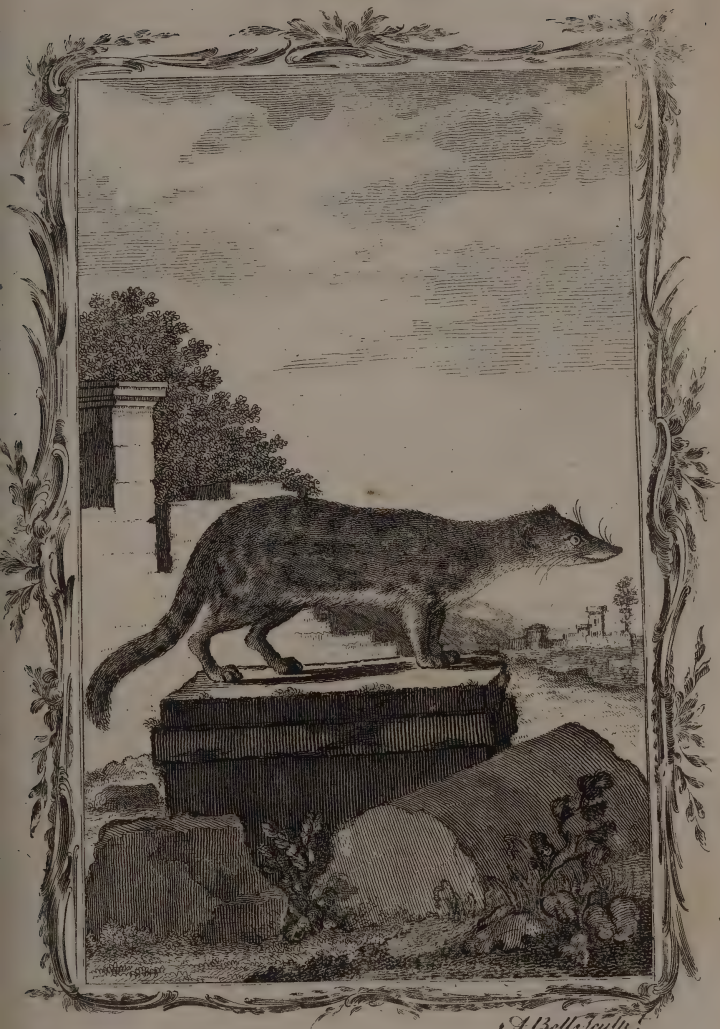
GREAT MANGOUSTE.

Plate CCXXVII.



NEMS.

Plate CCXXVIII.



FOSSANE.

Plate CCXXIX.

VANSIRE.

The MAKIS*, or MAUCAUCO'S.

AS the name *maki* has been given to ſeveral animals, we could only employ it as a generic term, under which we ſhall comprehend three animals of the ſame genus, but of diſtinct ſpecies. Theſe three animals have long tails, and feet like thoſe of the monkey; but their muzzle is long, like that of the martin, and they have ſix cutting teeth in the under jaw, while

* Ring-tailed maucauco with the end of the noſe black, erect ears, white face, and black circles round the orbits. The hair on the top and hind part of the head is of a deep aſh-colour; the back and ſides are of a reddiſh aſh-colour; the outſides of the limbs are paler; and the belly and inſides of the limbs are white. All its hair is very ſoft, cloſe, fine, and erect, like velvet. The tail is twice the length of the body, and marked with numbers of regular rings of black and white; and, when ſitting, it is twiſted round the body, and brought over its head. The nails are flat, particularly thoſe of the thumbs of the hind feet. The inſide of the hands and feet are black. It is of the ſize of a cat; *Pennant's Synopſ. of Quad. p.* 137.

The word *maki* ſeems to be derived from *mocock* or *maucauc*, which is the name of thoſe animals in Moſambique, and in the iſlands adjacent to Madagaſcar.

Vari; *Flacourt. Hiſt. Madag. p.* 153.

Mocawk; *Groſe's Voy. p.* 41.

Maucauco; *Edwards, Hiſt. Birds, p.* 197.

Proſimia cinerea, cauda cincta annulis alternatim albis et nigris; *Briſſon. Quad. p.* 157.

Lemur catta, caudatus, cauda albo nigroque annulata; *Linn. Syſt. Nat. p.* 45. *Oſbeck's Voy. vol.* ii. *p.* 168.

the monkeys have only four. The firſt of theſe animals is the mococo or maucauco, commonly known by the name of the ring-tailed *maki*. The ſecond is the mongous, commonly called the *Brown Maki**. But this denomination is improper; for ſome individuals are all brown, and others have their cheeks black, and their feet yellow. The third is the *Vari* †, by ſome called

* The woolly maucauco, with orange-coloured irides, ſhort rounded ears, end of the noſe black, eyes lodged in a circle of black, and the ſpace between them of the ſame colour. The reſt of the noſe and lower ſides of the cheeks are white. When in full health, the whole upper part of the body is covered with long, ſoft, and thick fur, a little curled or waved, and of a deep browniſh aſh colour. The tail is very long, and covered with the ſame ſort of hair, and of the ſame colour. The breaſt and belly are white, and the hands and feet naked and duſky. The nails are flat, except that of the inner toe of the hind feet. It is of the ſize of a cat. The paws are ſometimes white or yellow, and the face wholly brown; *Pennant's Synopſ. of Quad. p.* 136.

Mongous, the name of this animal in the Eaſt Indies.

Macaſſer fox; *Nieuhoff's Voy. p.* 361.

Simia ſciurus, lanuginoſus, fuſcus; *Petiver Gazophyl. tab.* 17. *fig.* 5.

The mongooz; *Edw. Gleanings, p.* 12.

Proſimia fuſca, naſo pedibuſque albis; *Briſſon. Quad. p.* 156.

Lemur mongooz, caudatus, griſeus, cauda uni colore; *Linn. Syſt. Nat. p.* 44.

† The ruffed maucauco, with orange-coloured irides, long hair round the ſides of the head, ſtanding out like a ruff, and a long tail. The colour of the whole animal is black, but not always, being ſometimes white, ſpotted with black; but the feet are black. It is rather larger than the ring-tailed ſpecies; *Pennant's Synopſ. of Quad. p.* 138.

Vari, or varicoſſi; *Flacourt. Hiſt. Madag. p.* 153. *Cauche's Voy. p.* 53.

Black

called the *Pied Maki*. But this denomination is ill applied; for, besides the pied variety, some individuals are entirely black, and others entirely white. These animals are all natives of the Eastern regions of Africa, and particularly of Madagascar, where they are very numerous.

The maucauco is a beautiful animal. His aspect is agreeable, his figure elegant, and his hair always neat and glossy. He is remarkable for the largeness of his eyes, the height of his hind legs, which are much longer than those before, and his large and handsome tail, which is always erect, always in motion, and garnished with thirty alternate rings of black and white, well marked and separated from each other. His manners are gentle, and, though he has a great resemblance to the monkeys, he possesses none of their malicious dispositions. In a state of liberty, the maucauco's live in society, and they are found in Madagascar in troops of thirty or forty *. In a domestic state, the prodigious rapidity of their movements renders them incommodious: It is for this reason alone that they are generally chained; for, though extremely active and vivacious, they are neither mischievous

Black maucauco; *Edw. Gleanings, p.* 13.

Lemur macaco, caudatus, niger, collari barbato; *Linn. Syst. Nat. p.* 44.

* The vari's, whose tails are barred with black and white, go in troops of thirty, forty, or fifty: They resemble the varicossi's; *Voyage de Flacourt, p.* 154.

nor ferocious. They tame to ſuch a degree as to go out and return, without any danger of running off. Their gait is oblique, like that of all animals which have hands inſtead of feet. The maucauco leaps more gracefully than he walks. He is a ſilent animal, uttering only a ſhort acute cry when ſurpriſed or irritated. He ſleeps in a ſitting poſture, with his muzzle reſting on his breaſt. His body is not thicker than that of a cat, but it is longer; and the height of his legs gives him the appearance of being larger than he really is. His hair, though very ſoft to the touch, ſtands always erect. In the male maucauco, the organs of generation are ſmall and concealed; but thoſe of the mongous, or woolly maucauco, are diſproportionally large, and very apparent.

The mongous is ſmaller than the maucauco; his hair is likewiſe ſilky, pretty ſhort, and ſomewhat curled. His noſe is larger than that of the maucauco, and reſembles that of the vari. I had a mongous in my poſſeſſion for ſeveral years, which was altogether brown. It had yellow eyes, a black noſe, and ſhort ears. It amuſed itſelf with eating its own tail, and actually deſtroyed the laſt four or five vertebræ. This animal was extremely dirty, and ſo troubleſome that we were obliged to chain him. Whenever he could make his eſcape, he went into the neighbouring ſhops in queſt of fruits, ſugar, and ſweetmeats,

ſweetmeats, and opened the boxes which contained them. It was difficult to ſeize him, and he bit cruelly even thoſe with whom he was beſt acquainted. He uttered a low grunting noiſe, almoſt perpetually; and, when tired of being alone, he croaked like a frog, and ſo loud as to be heard at a great diſtance. This mongous was a male, and his teſticles were extremely large in proportion to the ſize of his body. He was fond of the ſhe-cats, and even ſatisfied his deſires, without any intimate union: His embraces were, of courſe, ineffectual. He dreaded cold and moiſture; he never departed from the fire, and ſtood on end to warm himſelf. He was fed with bread and fruits. His tongue was rough, like that of a cat; and, when permitted, he licked a perſon's hand till it was inflamed, and often finiſhed this operation with a ſevere bite. The cold of the winter 1750 killed him, though he never quitted his ſtation near the fire. His movements were extremely briſk, and ſometimes petulant. He often ſlept during the day; but his ſlumbers were ſo light, that the ſmalleſt noiſe awaked him.

In this ſpecies there are ſeveral varieties, both in colour and ſize: The mongous, whoſe hiſtory has juſt now been given, was totally brown, and about the ſize of an ordinary cat. I ſaw one, which, though an adult, was not larger than the fat ſquirrel. If this ſmall mongous had not perfectly reſembled the large kind, except in

ſize, it would unqueſtionably have been a diſtinct ſpecies. But, as we have no evidence that theſe two animals do not intermix, we muſt ſtill regard them as the ſame ſpecies, till we acquire ſome new light as to their hiſtory and œconomy.

The vari * is larger, ſtronger, and more ferocious than the maucauco. In a ſtate of liberty, he is even dangerous. We are told by travellers, 'That theſe animals are as furious as 'tigers; that they make ſuch a noiſe in the 'woods, that, when only two of them are to-'gether, one would believe there were a hun-'dred; and that it is difficult to tame them †.' The voice of the vari has ſome reſemblance to the roaring of a lion, and is tremendous to thoſe who hear it for the firſt time. This aſtoniſhing ſtrength of voice, in a middle-ſized animal, depends on the ſingular ſtructure of its wind-pipe, the two branches of which widen, and form a large cavity, before they enter the lungs. Hence he differs from the maucauco both in ſtructure and diſpoſitions. His hair, in general, is longer;

* Flacourt, who calls the maucauco *vari*, gives the name of *varicoſſy* to this animal; which epithet, probably, denotes the greater ſize and ferocity of the animal, which likewiſe differs from the maucauco in ſeveral other articles.

† Voyage de Flacourt, p. 153.—When this animal is taken young, he apparently loſes his ferocity, and ſeems to be as gentle as the maucauco. 'It is an animal of a ſocial, mild, and peace-'able nature, and has neither the cunning nor the malice of the 'monkey;' *Edw. Gleanings, p.* 13.

and he has a kind of a ruff or cravat of ſtill longer hair, which ſurrounds his neck, and forms a very diſtinct character by which he is eaſily known. In colour, he varies from white to black, or pied; and his hair, though long and very ſoft, ſtands almoſt perpendicular to the ſkin. His muzzle is larger and proportionally longer than that of the maucauco. His ears are much ſhorter, and fringed with long hairs. His eyes are of ſo deep an orange colour, that they appear to be red.

The maucauco, the mongous, and the vari, belong to the ſame country, and ſeem to be confined to Madagaſcar *, Moſambique, and the lands adjacent to theſe iſlands. They appear to be in the Old Continent what the opoſſums are in the New, which laſt, like the former, have four hands. With regard to figure, the makis ſeem to conſtitute the ſhade between the long-

* In the province of Melagaſſe in Madagaſcar, the different ſpecies of monkeys are extremely numerous. Some of them are brown, with woolly hair, and a long buſhy tail, which they raiſe above their backs, and form a ſhade with it to protect themſelves from the ſun and rain. In this manner they ſleep, like the ſquirrels, upon the branches of trees. Beſides, they have round ears, and a muzzle like the martin. This ſpecies is not ſo troubleſome and malicious as the other kinds. The antavarres have the ſame kind of hair with the former, and a white ruff round the neck. Some of them are entirely white, with a long muzzle. They are as large as the former, and grunt like hogs; *Relat. de Madagaſcar, par F. Cauche, p.* 127. *Nota*, This paſſage plainly points out the mongous and vari; and it is upon this authority that I have ſaid, that ſome vari's are black, others pied, and others entirely white.

tailed monkeys and the digitated quadrupeds. Like the monkeys, they have four hands and a long tail; and, at the same time, their muzzle is sharp like that of the fox or pole-cat. In manners, however, they have a greater resemblance to the monkeys; for, though they sometimes eat flesh, and likewise lie in wait for birds, they are more frugiverous than carnivorous, and prefer, even in a domestic state, fruits, roots, and bread, to flesh, either raw or roasted.

Plate CCXXX.

A. Bell Sculp.

MAUCAUCO.

MONGOUS.

VARI.

The LORIS, or TAILLESS MAUCAUCO*.

THE loris is a ſmall animal of Ceylon, which is very remarkable for the elegance of its figure, and the ſingularity of its conformation. Of all animals, its body is, perhaps, the

* Maucauco with a ſmall head, ſharp pointed noſe, orbits ſurrounded with a black circle, and a white ſpace between them. From the top of the head, along the middle of the back, to the rump, there is a dark ferruginous line, which on the forehead is bifurcated. The ears are ſmall. The body is covered with ſhort, ſoft, and ſilky aſh-coloured, and reddiſh fur. The toes are naked, and the nails flat; thoſe of the inner toe on each hind foot are long, crooked, and ſharp. The length of the animal, from the noſe to the rump, is ſixteen inches; *Pennant's Synopſ. of Quad. p.* 135.

Loris, or *loeris*, the name given to this animal by the Dutch.

Animal elegantiſſimum Robinſoni; *Raii, Syn. Quad. p.* 161.

Simia parva ex cinereo fuſca, naſo productiore, brachiis, manibus, pedibuſque longis, tenuibus, Belgis *een loeris*. Ex India Orientali; *Muſ. Petrop. p.* 339.

Animalculum cynocephalum, Ceylonicum, tardigradum dictum, ſimiæ ſpecies; *Seba, vol.* i. *tab.* 35. *fig.* 1. *et* 2. Cercopithecus Ceilonicus, ſeu tardigradus; *Idem. tab.* 47. *fig.* 1. *Klein. Quad. p.* 86.

Lemur tardigradus ecaudatus; *Linn. Syſt. Nat. p.* 44.

Simia unguibus indicis pedum poſteriorum longis, incurvis, et acutis; *Briſſon, Quad. p.* 134. Cynocephalus unguibus indicis longis, incurvis, et acutis; *Idem. p.* 135.

longeſt

longeſt in proportion to its bulk. It has nine lumbar vertebræ, whilſt all other quadrupeds have only five, ſix, or ſeven. The length of its body is an effect of this ſtructure; and it appears ſtill longer, becauſe it wants a tail. Were it not for this defect of tail, and the uncommon number of vertebræ, it might be comprehended under the liſt of makis; for it reſembles them in the hands and feet, in the quality of the hair, in the number of teeth, and in the pointed muzzle. But, independent of the ſingularity above taken notice of, which removes this animal from the makis, he has other peculiar qualities. His head is entirely round, and his muzzle is almoſt perpendicular to this ſphere. His eyes are exceedingly large, and very near each other. His ears are large, rounded, and garniſhed in the inſide with three auricles, in the form of a ſmall ſhell. But, what is ſtill more remarkable, and perhaps peculiar to this animal, the female diſcharges her urine by the clitoris, which is perforated like the penis of the male; and theſe two organs have a perfect reſemblance to each other, both in figure and ſize.

Linnæus has given a ſhort, but excellent deſcription of this animal *. It is likewiſe very

* Statura ſciuri, ſubferruginea, linea dorſali ſubfuſca; gula albidiore, linea longitudinalis oculis interjecta alba. Facies tecta, auriculæ urcœlatæ, intus bifoliatæ; pedum palmæ plantæque nudæ, ungues rotundati; indicum plantarum vero ſubulati. Cauda fere nulla, mammæ 2 in pectore, 2 in abdomine verſus pectus. Animal tardigradum, auditu excellens; *Linn. Syſt. Nat. p.* 44.

well

LORIS.

well repreſented by Seba; and it appears to be the ſame animal of which Thevenot ſpeaks in the following terms: 'I ſaw in the Mogul country, apes which had been brought from Ceylon. 'They were much eſteemed, becauſe they exceeded not the ſize of a man's hand, and 'were of an uncommon ſpecies. Their front 'was flat, their eyes large and round, and of 'a bright yellow colour, like thoſe of certain 'cats. Their muzzle is very ſharp, and the 'inſide of their ears is yellow. They have no 'tail.... When I examined them, they ſtood 'on their hind-feet, often embraced each other, 'and looked ſteadfaſtly on the people, without 'being afraid *.'

* Relation de Thevenot, tom. iii. p. 217.

THE JAVELIN BAT*.

OF the various bats which were unknown, we denominated ſome by names derived from foreign languages, and others by appellations drawn from their moſt ſtriking characters. The animal now under conſideration, we have called the *javelin bat*, becauſe it has a membrane on its noſe nearly of the ſhape of an ancient javelin or ſpear. Though this character be ſufficient to diſtinguiſh it from all other bats, we may add, that it has almoſt no tail; that it is nearly of the ſame colour and ſize with the

* Javelin bat with large pointed ears, and an erect membrane at the end of the noſe, in the form of the head of an ancient javelin, having on each ſide two upright proceſſes. It has no tail; the fur is cinereous; and it is of the ſize of a common bat; *Pennant's Synopſ. of Quad. p.* 363.

Veſpertilio Americanus vulgaris; *Seb. Muſ. vol.* i. *tab.* 55. *fig.* 2.

Veſpertilio perſpicillatus, ecaudatus, naſo foliato, plano, acuminato; *Linn. Syſt. Nat. p.* 47.

Veſpertilio murini coloris, pedibus anticis tetradactylis, poſticis pentadactylis; *Briſſon, Quad. p.* 161. — *Nota*, This animal has five toes on the fore-feet, as well as all the other bats.

Bat from Jamaica; *Edw. Birds, p.* 201.

Veſpertilio roſtro appendice auriculæ forma donato; *Sloan's Hiſt. of Jamaica, vol.* ii. *p.* 330.

La chauve-ſouris ſer-de-lance; *Buffon.*

common

common bat; but that, inſtead of having ſix cutting teeth in the under jaw, like moſt of the other ſpecies, it has only four. This bat, which is very common in America, does not exiſt in Europe.

In Senegal, there is another bat with a membrane on its noſe; but this membrane, inſtead of reſembling a javelin, or a horſe ſhoe, as in this and a former ſpecies, has the figure of an oval leaf. Theſe three bats, as they belong to different climates, are not ſimple varieties, but diſtinct ſpecies. M. Daubenton has deſcribed this bat under the name of the *leaf bat*, in the *Memoirs of the Academy of Sciences*, *ann.* 1759, *p.* 374.

The bats, which are already greatly allied to the birds by their flying, their wings, and the ſtrength of their pectoral muſcles, ſeem to make a ſtill nearer approach by theſe creſts, or membranes, on their face. Theſe redundant parts, which, at firſt ſight, appear to be ſuperfluous deformities, are the real characters, the viſible ſhades, by which Nature has connected theſe flying quadrupeds to the birds; for moſt of the latter have membranes and creſts round their bills and heads, which ſeem to be equally ſuperfluous with thoſe of the bats.

SUPPLEMENT.

M. Pallas, who ſent us deſcriptions of two new bats, the figures of which we now give, informs us, that the javelin bat, formerly deſcribed, ſhould not be confounded with the bat deſcribed by Seba under the appellation of the common American bat. M. Pallas, after comparing the two, aſſures us, that they are very different ſpecies. Our acknowledgments are due to M. Pallas for pointing out this miſtake.

He then gives a deſcription of one of theſe new bats, which is a native of India. He calls it *cephalotte*, becauſe its head is very large in proportion to its body. The neck is alſo more diſtinct, becauſe it is not ſo thickly covered with hair. The following is an extract from M. Pallas's deſcription.

'This bat, hitherto unknown to the Naturaliſts, is found in the Molucca iſlands, from which two females were ſent to M. Schloſſer at Amſterdam. The female ſeems to produce but one young. This conjecture is founded on M. Pallas's diſſection of one of theſe females, in which he found one fœtus only.

'This bat,' continues M. Pallas, 'differs from all others in the teeth, which have ſome reſemblance to thoſe of the mouſe, or even of

'the

'the hedge-hog, and appear to be rather deſtin-
'ed for cutting fruits than for devouring prey.
'The canine teeth of the upper jaw are ſepa-
'rated by two ſmall teeth. In the under jaw,
'theſe ſmall teeth are wanting, and the two
'canine teeth of the ſame jaw are like the cut-
'ting teeth of a mouſe.'

I ſhall here add a table of the number and arrangement of the teeth in the bat-kind, communicated to me by M. Daubenton; from which it will appear, that the cephalotte, and the *ſhrew bat*, to be afterwards taken notice of, are new ſpecies diſcovered by M. Pallas.

NAMES.	Cutting teeth below.	Cutting teeth above.	Grinders above.	Grinders below.	Canine teeth.	Total.
Horſe-ſhoe bat	0	4	8	10	4	26
Leaf bat	0	4	8	10	4	26
Flying rat	2	2	8	10	4	26
Flying field mouſe	2	2	8	10	4	26
Flying marmot	2	6	8	8	4	28
Flying ſquirrel	0	4	10	10	4	28
Flying campagnol	4	6	8	8	4	30
Noctule	4	6	8	10	4	32
Serotine	4	6	8	10	4	32
Flying dog	4	4	8	12	4	32
Ternate bat	4	4	8	12	4	32
Pipiſtrelle	4	6	10	10	4	34
Long-eared bat	4	6	10	12	4	36
Common bat	4	6	12	12	4	38
Flying dormouſe	4	6	12	12	4	38
Javelin bat	4	4	10	10	4	32
Cephalotte	2	0	6	10	4	22
Shrew bat	4	4	6	6	4	24

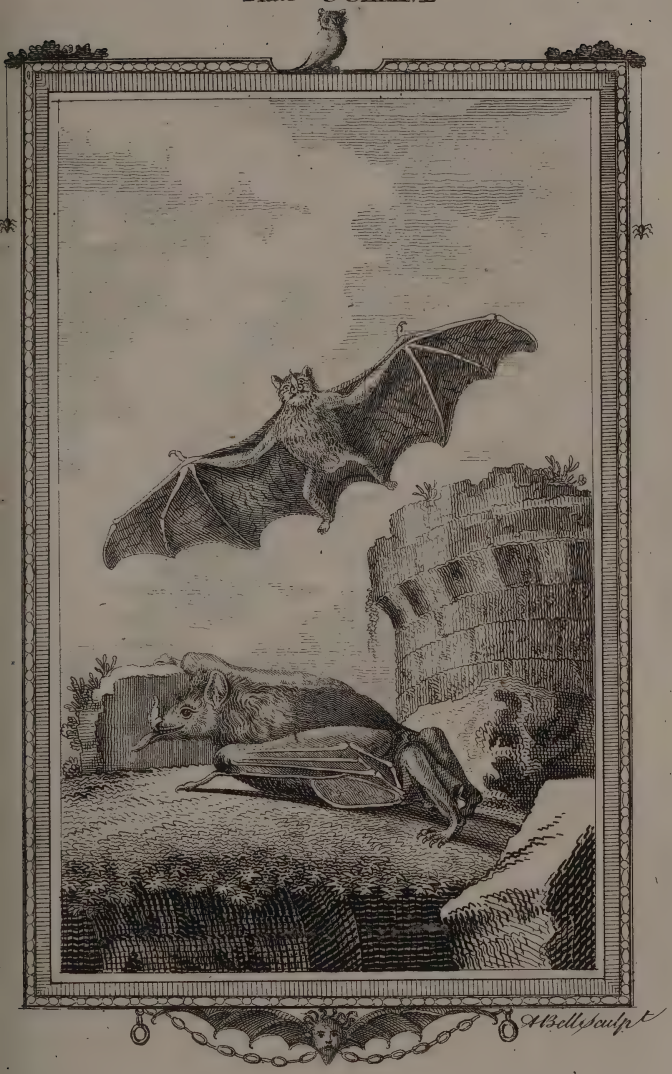
Plate CCXXXIV.

HORSE SHOE BAT.

Plate CCXXXV.

LARGE-HEADED BAT

Plate CCXXXVI.



SHREW BAT

'The tail of the cephalotte bat,' says M. Pallas, 'is not long, and is situated under the 'membrane between the two thighs. The 'figure of the noſtrils diſtinguiſhes it from 'every other bat. The form of the pupil likewiſe differs from that of every other bat. The 'breaſt is broad, and has a greater reſemblance 'to the breaſt of a bird than any other ſpecies. 'This animal is about $3\frac{3}{4}$ inches long, and its 'wings extend above a foot in length.'

The ſecond ſpecies of bats deſcribed by M. Pallas under the denomination of *veſpertilio ſoricinus*, or ſhrew bat, has no tail, and carries a leaf or membrane on its noſe. It is the ſmalleſt of thoſe kinds which want the tail, being only about two inches long. It is equally common in the warmeſt regions of America, the Caribbee iſlands, and Surinam. Its figure ſeems to be given by Edwards, *plate* 201. *fig.* 1. The muzzle of this bat is longer, and more ſlender than in the other kinds. The tongue is remarkable both for its length and ſtructure. The male and female hardly differ but in the organs of generation.

The SERVAL*, or MOUNTAIN CAT.

THIS animal, which lived ſeveral years in the royal menagery, appears to be the ſame with that deſcribed by the Gentlemen of the Academy under the name of *chat-pard;* and we ſhould, perhaps, have been ſtill ignorant of its real name, if the Marquis de Montmirail had not diſcovered it in an Italian book, of which he ſent us the following paſſage in our own language: 'The *maraputé*,' ſays P. Vincent-Marie, 'which the Portugueſe in India call *ſerval*, is a 'ferocious animal, larger than a wild cat, and 'ſomewhat leſs than the civet; from which laſt 'he differs, by having a rounder and larger 'head, and a kind of depreſſion on the middle 'of the front. He reſembles the panther in the 'colour of his hair, which is yellow on the head, 'back, and flanks, and white on the belly; and 'likewiſe in the ſpots, which are diſtinct, equal-'ly diſtributed, and a little ſmaller than thoſe 'of the panther. His eyes are extremely bril-

* The name which the Portugueſe have given to this animal. The natives of Malabar call it *maraputé*.

Chat-pard; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* i. *p.* 109.

Voyage du Père F. Vincent-Marie de Sainte Catharine de Sienne, p. 409.

'liant. His whiſkers are long and ſtiff; his 'tail is ſhort; and his feet are armed with long 'hooked claws. He inhabits the mountains of 'India. He is ſeldom ſeen on the ground, but 'remains always on the trees, where he makes 'his neſt, and ſeizes birds, which conſtitute his 'chief nouriſhment. He leaps from tree to 'tree as nimbly as a monkey, and with ſuch 'addreſs and agility, that he runs through a 'conſiderable ſpace in an inſtant, and may be 'ſaid only to appear and diſappear. He is ex-'tremely fierce, and yet he flies the aſpect of 'man, unleſs when provoked, and particularly 'when his dwelling is injured: He then be-'comes furious, darts upon the offender, and 'bites and tears nearly in the ſame manner as 'the panther.'

Neither captivity, nor good or bad treatment, can ſoften the ferocity of this animal. The one we ſaw at the menagery was always prepared to dart upon thoſe who approached him; and we were obliged to draw and deſcribe him through the grate of his apartment. He was fed with fleſh like the panthers and leopards.

This ſerval or maraputa of Malabar and India*, appeared to be the ſame animal with the tiger-cat of Senegal and the Cape of Good Hope,

* At Sagari, an iſland in the Ganges, there are tiger-cats as large as a wedder; *Nouv. Voyage par le Sieur Luihier, p.* 90.

which, according to the teſtimony of travellers †, reſembles the cat in its figure, and the tiger (that is, the panther or leopard) by the black and white ſpots of its hair. 'This ſerval,' they remark, 'is four times larger than a cat. He is 'very voracious, and eats apes, rats, and other 'animals.'

From comparing the ſerval with the *chat-pard*, or mountain cat deſcribed by the Gentlemen of the Academy, we diſcovered no other differences than the long ſpots on the back, and the annulated tail of the former, which were wanting in the latter. The ſpots on the back of the ſerval are only placed nearer each other than on the reſt of the body. But theſe differences are too ſlight to create any ſuſpicion concerning the identity of the ſpecies of theſe two animals.

† Voyage de Le Maire, p. 100.—The wood cat or tiger-cat is the largeſt of all the wild cats in the Cape. He lives in the woods, and is ſpotted nearly in the ſame manner as the tiger. The ſkins of theſe animals are excellent furs both for warmth and ornament, and they bring a good price at the Cape; *Deſcript. du Cap de Bonne-Eſperance, par Kolbe, tom.* iii. *p.* 50.

Plate CCXXXVII.

SERVAL.

The OCELOT, or MEXICAN CAT*.

THE ocelot is an American animal. It is ferocious and carnivorous, and may be ranked with the jaguar and couguar; for it approaches them in magnitude, and reſembles them in figure and diſpoſitions. A male and female were brought alive to Paris by M. l'Eſcot, and

* Tlacoozlotl, Tlalocelotl. Catus pardus Mexicanus; *Hernand. Hiſt. Mexic. p.* 512.

Felis ſylveſtris Americanus, tigrinus; *Seb. Muſ. tom.* i. *p.* 47. *tab.* 30. *fig.* 2. *and p.* 77. *tab.* 48. *fig.* 2.

The Mexican cat has its head, back, upper part of the rump, and tail, of a bright tawny colour. A black ſtripe extends along the top of the back, from head to tail. From the noſtrils to the corners of the eye is a ſtripe of black, and the forehead is ſpotted with black. The ſides are whitiſh, marked lengthwiſe with long ſtripes of black, hollow and tawny in the middle; in which are ſprinkled ſome ſmall black ſpots; from the neck towards the ſhoulder point are others of the ſame colours, and the rump is marked in the ſame manner. The legs are whitiſh, varied with ſmall black ſpots. The tail is ſpotted with ſmall black ſpots near its baſe, and with larger near the end, which is black; *Pennant's Synopſ. of Quad. p.* 177.

Pardalis. Felis cauda elongata, corpore maculis ſuperioribus virgatis, inferioribus orbiculatis . . . habitat in America. Magnitudo melis, ſupra fuſcus, ſubtus albicans; lineæ punctaque nigra per totum corpus longitudinaliter ſparſa; ſed pedes et abdomen tantum punctis, latera lineis latioribus albis et fuſcis pinguntur. Aures breves margine bifidæ abſque penicillis, pedes 5-4 cauda verticillato variegata proportione cati. Myſtaces 4 ordinum, in ſingulo ordine ſetæ 3, five 5, albæ, baſi nigræ, longitudine capitis; *Linn. Syſt. Nat. p.* 62.

we ſaw them at the fair of St. Ovide in the month of September 1764. They came from the neighbourhood of Carthagena, and had been carried off from their mother when very young, in the month of October 1763. At the age of three months, they had become ſo ſtrong and cruel, that they killed and eat a bitch which had been given to them for a nurſe. At the age of one year, when we ſaw them, they were about two feet in length; and it is probable that they had not then acquired above one half or two thirds of their full growth. They were exhibited under the name of the *tiger-cat;* but we have rejected this precarious and compound appellation, becauſe the jaguar, the ſerval, and the margay or Cayenne cat, were tranſmitted to us under the ſame denomination, though each of theſe animals differ from one another, as well as from the ocelot.

Fabri is the firſt author who mentions this animal in a diſtinct manner. He cauſed the drawings of Recchi to be engraved, and from theſe drawings, which were coloured, he compoſed a deſcription of the ocelot. He likewiſe gives a kind of hiſtory of it from the writings and information of Gregoire de Bolivar. I have made theſe remarks with a view to remove a difficulty which had deceived all the naturaliſts as well as myſelf. This difficulty is to aſcertain whether the two animals drawn by Recchi, the firſt under the name of *tlatlauhqui-ocelotl*, and the

the ſecond under that of *tlacoozlotl*, *tlalocelotl*, and afterwards deſcribed by Fabri as diſtinct ſpecies, are not the ſame animal. Though the figures are pretty ſimilar, they were regarded as diſtinct animals, becauſe their names, and even the deſcriptions of them, were different. I at that time imagined that the firſt might be the ſame with the jaguar, and therefore gave it the Mexican name *tlatlauhqui-ocelotl*, which I now perceive did not belong to it: And, ſince I had an opportunity of ſeeing both the male and female, I am perſuaded that the two deſcribed by Fabri are only the ſame animal, of which the firſt is the male and the ſecond the female. Nothing leſs than an examination of the male and female together could have enabled us to detect this error. Of all ſpotted animals, the robe of the male ocelot is unqueſtionably the moſt beautiful, and the moſt elegantly variegated *. Even that of the leopard is not to be compared with it for vivacity of colours, and ſymmetry of deſign, far leſs thoſe of the jaguar, panther, and ounce. But, in the female ocelot, the colours are fainter,

* Univerſum corpus pulchro roſeoque ſubrubet colore, excepto inferiore ventre qui albicat potius; maculis roſarum effigie, nigricantibus omnibus intra ſuave rubentem colorem, totum ita corpus, pedes et cauda ordine quodam diſtinguuntur ut elegantem plane huic animali acu pictum tapetem vel peripetaſma impoſitum crederes: Sunt autem maculæ hæ in dorſe et capite rotundiores majoreſque: Verſus ventrem vero pedeſque oblongiuſculæ et multo minores; *Fabri apud Hernand. Hiſt. Mex. p.* 498.

and the design more irregular. This remarkable difference deceived Recchi, Fabri *, and others.

When the ocelot has acquired his full growth, he is, according to Bolivar, 'two feet and a half high, and about four feet in length. The tail, though pretty long, touches not the ground, and, of course, exceeds not two feet. He is a very voracious, and, at the same time, a timid animal. He seldom attacks men, and is afraid of dogs. When pursued, he flies to the woods, and climbs a tree, where he remains, in order to sleep, and to watch the passage of cattle or smaller animals, and darts down upon them, whenever they are within his reach. He prefers blood to flesh: Hence he destroys a great number of animals; because, instead of satiating himself by devouring their flesh, he only quenches his thirst by drinking their blood †.'

In

* Si animalis figuram spectemus cum antecedente non nihil corporis delineatio congruit; si colorem et maculas quibus pingitur, plurimum discrepat. In hoc totius color corporis non rubicundus sed obscure cinereus apparet, præter ventrem tamen qui albicat. Maculæ nec ordinatæ adeo nec ita rotundæ roseive coloris et figuræ, sed oblongæ nigricantes omnes, in medio vero albicantes sparguntur; crura non ita fortia, &c.; *ibid. p.* 512.

† Dampier mentions this animal under the name of the *tiger-cat*. 'The tiger-cat of the Bay of Campeachy is about 'the size of a bull-dog. His legs are short, and his body re-'sembles that of a mastiff. But, in the head, hair, and the 'manner of hunting his prey, he has a great similarity to the 'tiger *(jaguar)*, except that he is not so large. They are here

'very

In a ſtate of captivity, he retains his original manners. Nothing can ſoften the natural ferocity of his diſpoſition, or calm the reſtleſſneſs of his movements. For this reaſon, he is always kept in a cage. 'At the age of three months,' ſays M. l'Eſcot, 'when theſe two young ocelots 'had devoured their nurſe, I kept them in a 'cage, and fed them with freſh meat, of which 'they eat from ſeven to eight pounds a-day. 'The male and female rub againſt each other 'like our domeſtic cats. The males have a re-'markable ſuperiority over the females. Not-'withſtanding the violent appetite of theſe two 'animals for fleſh, the female never preſumed 'to partake till the male was ſatiated, or gave 'her the pieces he had rejected. I ſometimes 'gave them a live cat, whoſe blood they ſucked 'till the animal died; but they never eat its 'fleſh. I put on board two kids for their 'ſubſiſtence; for they neither eat boiled nor 'ſalted meat *.'

It appears from the teſtimony of Bolivar, and likewiſe from that of M. l'Eſcot, that the female

'very numerous. They devour calves, and game of all kinds, 'which abound in this country, and which render them leſs 'dangerous to men. . . Their aſpect is extremely proud and fero-'cious;' *Dampier's Voyage*, *vol.* ii. *p.* 62.

* Letter of M. l'Eſcot, who brought theſe animals from Carthagena to M. de Beoſt, correſpondent of the Academy of Sciences, dated September 17, 1764. *Nota*, M. de Beoſt, who obligingly ſent this letter to us, is a great adept in natural hiſtory; and this is not the only opportunity we ſhall have of mentioning his communications.

ocelot

ocelot produces but two young at a litter; for the latter informs us, that, before the two young ones mentioned above were taken, the mother was killed. The ocelots, like the jaguar, the panther, the leopard, the tiger, the lion, and all animals remarkable for the largeneſs of their ſize, produce but a ſmall number at a time. But the productions of a cat, who may be aſſociated with this tribe, are numerous; which is a proof, that the number produced depends more upon magnitude than figure.

Plate CCXXXVIII.

OCELOT.

Plate CCXXXIX.

FEMALE OCELOT.

The MARGAY, or CAYENNE CAT*.

THE margay is much ſmaller than the ocelot. In ſize and figure, he reſembles the wild cat, only his head is more ſquare, his muzzle and tail longer, and his ears more rounded. His hair is alſo ſhorter than that of the wild cat, and he is marked with black bands and ſpots upon a yellow ground colour. He was ſent

* Cayenne cat, with the upper part of the head, neck, back, ſides, ſhoulders, and thighs, of a bright tawny colour. The face is ſtriped downwards, with black. The ſhoulders and body are marked with ſtripes, and oblong, large, black ſpots, and the legs with ſmall ſpots. The breaſt, and inſide of the legs and thighs, are whitiſh, and ſpotted with black. The tail is very long, and marked with black, tawny, and gray. It is of the ſize of a common cat; *Pennant's Synopſ. of Quad. p.* 182.

Margay, a word derived from *Maragua*, or *Maragaia*, the Braſilian name of this animal.

At Maragnon there is a ſpecies of wild cats, which the Indians call *Margaia*, with beautifully ſpotted ſkins; *Miſſ. du P. d'Abbeville*, *p.* 250.

Tepe Maxtlaton; *Fernand. Hiſt. Nov. Hiſpan. p.* 9.

Maraguao ſive Maracaia; *Marcgr. Hiſt. Nat. Braſil. p.* 233.

Felis fera tigrina Malakaia; *Barrére*, *Hiſt. de la Franc. Equin. p.* 153.

Le Pichou, cat-a-mountain; *du Pratz*, *Louiſian. vol.* ii. *p.* 64.

Felis ſylveſtris tigrina ex Hiſpaniola; *Seba*, *vol.* i. *p.* 77. *tab.* 48. *fig.* 2.

Felis ſylveſtris tigrina, ex griſeo flaveſcens, maculis nigris variegata; *Briſſon. Quad. p.* 193.

to

to us from Cayenne, under the name of the *tiger-cat*. He, indeed, is of the ſame nature with the cat, jaguar, and ocelot, animals who have received the appellation of *tigers* in the New Continent. According to Fernandez, this animal, when full grown, is not ſo large as the civet; and, according to Marcgrave, whoſe compariſon ſeems to be more juſt, he is of the ſize of a wild cat, which he reſembles likewiſe in natural diſpoſitions, living on ſmall animals, poultry, &c. But it is extremely difficult to tame him, and he never loſes his natural ferocity. His colours vary, though they are generally ſuch as we have repreſented them. This animal is very common in Guiana, Braſil, and all the other regions of South America; and he ſeems to be the ſame with the pichou* of Louiſiana. But the ſpecies is not ſo frequent in temperate as in warm climates.

If we take a ſurvey of theſe cruel animals, whoſe ſkins are ſo beautiful, and whoſe nature is ſo perfidious, we ſhall find, in the Old Continent, the tiger, panther, leopard, ounce, and ſerval; and, in the New Continent, the jaguar, ocelot, and margay, which three appear to be miniatures of the former, and poſſeſſing neither

* The pichou is a kind of cat as tall as a tiger, but not ſo thick. His ſkin is equally beautiful. He makes great devaſtation among poultry; but happily he is not very common in Louiſiana; *Hiſt. de la Louiſiane, par le Page du Pratz, tom.* ii. *p.* 92. *fig. p.* 67.

the

the ſame ſtature nor ſtrength; they are alſo timid and daſtardly, in proportion as the others are bold and intrepid.

There is ſtill another animal of this genus, which the furriers call *guepard*. We have ſeen ſeveral ſkins of it, which reſembled thoſe of the lynx in the length of the hair. But, as the ears are not terminated by pencils, the guepard is not a lynx. Neither is he a panther nor a leopard; for his hair is not ſhort, and he has a mane of four or five inches long on his neck and between his ſhoulders. The hair on his belly is likewiſe three or four inches in length, and his tail is proportionally ſhorter than that of the panther, leopard, or ounce. He is nearly of the ſize of this laſt animal, being only about three feet and a half long. His fur, which is of a very pale yellow colour, is ſpeckled, like that of the leopard, with black ſpots; but they are ſmaller and nearer each other, being only three or four lines in diameter.

I imagined that this animal was the ſame with that mentioned by Kolbe under the name of the *tiger-wolf*, whoſe deſcription is below *. He

* He is of the ſize of a common dog, and ſometimes larger. His head is as big as that of a bull-dog. His chops, as well as his muzzle and eyes, are large, and his teeth are very ſharp. His hair is curled, like that of a water-dog, and ſpotted like that of a tiger. His paws are large, and armed with great claws, which he retracts at pleaſure, like the cats. His tail is ſhort.——The lion, tiger, and leopard are his mortal enemies. They purſue him even

He is common in the neighbourhood of the Cape of Good Hope. During the day he remains in the clefts of rocks, or in holes which he digs in the earth; and, in the night, he goes in queſt of prey. But, when he hunts, he makes a howling noiſe, which alarms both men and animals; ſo that it is eaſy either to avoid or to kill him. In fine, the word *guépard* ſeems to be derived from *lépard*, the mode in which the Germans and Dutch ſpell *leopard*. We have alſo remarked, in this ſpecies, varieties both in the ground colour and in that of the ſpots. But all the guepards have the common characters of long hair on the belly, and a mane on the neck.

SUPPLEMENT.

TO the article *Margay* we muſt refer the tiger-cat of Cayenne, mentioned by M. de la Borde in the following terms:

'The ſkin of the tiger-cat, like that of the 'ounce, is very much ſpotted. Though he has 'the diſpoſitions of the fox, he is ſomewhat 'ſmaller. He is commonly found in the woods

even to his den, dart upon him, and tear him in pieces; *Deſcript. du Cap de Bonne-Eſperance, par Kolbe, tom.* ii. *p.* 69. *Nota,* The animal which this author calls the *tiger,* is the leopard, and what he calls the *leopard,* is the panther.

'of

'of Cayenne. He is a great deſtroyer of game, 'ſuch as the agoutis, akouchis, partridges, phea- 'ſants, and other birds, whoſe young he ſeizes 'in their neſts. He is very alert in climbing 'trees, where he conceals himſelf. He runs by 'a kind of leaping; but his motion is not quick. 'In his aſpect, gait, and manner of lying in wait, 'he has a perfect reſemblance to the cat. At 'Cayenne, I have ſeen ſeveral of them chained 'in the houſes. They allowed themſelves to 'be ſtroked a little on the back. But they al- 'ways retained a degree of ferocity in their 'aſpect. They were fed with fiſh and meat, 'boiled or raw: Every other food was diſagree- 'able to them. They produce in all ſeaſons, 'whether ſummer or winter, and bring forth two 'at a time in the hollows of corrupted trees.'

There is another tiger-cat, or rather a ſpecies of wild cat, in Carolina, of which the late Mr. Colinſon ſent me the following notice:

'The male was of the ſize of a common cat, 'being nineteen inches long from the noſe to the 'tail, which laſt was four inches in length, and 'had eight white rings, like the maucauco. His 'colour was a bright brown, mixed with gray 'hairs. He was remarkable for pretty large 'black bars along the body and ſides, from the 'head to the tail. The belly is whitiſh, with 'black ſpots. The limbs are ſlender, and ſpotted 'with black. His ears have a large aperture,

'and

'and are covered with fine hair. On each side of the nose, below the eyes, are two large and remarkable black spots; below these spots, and joining the lip, there is a tuft of stiff black hairs. The make of the female is more slender. She is of a reddish gray colour, without any spots on the back; but, on the belly, which is of a dirty white colour, there is a black spot.'

Plate CCXL.

MARGAY.

The JACKAL and ADIVE*.

WE are uncertain whether these two names denote animals of different species. We only know, that the jackal is larger, fiercer, and more difficult to tame than the adive †; but that, in every other article, the resemblance is perfect. Hence the adive may be only the jackal rendered smaller, feebler, and more gentle than the wild race, by being tamed and kept in a domestic state; for the adive is to the jackal

* Dog of the form of a wolf, but much less. The colour is a bright yellow; *Pennant's Synopf. of Quad. p.* 158.

Chacal, Jackal, the name of this animal in the Levant. It has likewise received the following denominations from different authors: Adil; *Belon.* Tulki; *Olearius.* Siacalle; *Le Brun.* Addibo; *P. Vincent Marie.* Chical; *Haſſelquiſt.* Sical; *Pollux.* Squilachi; *Belon.* Zacalia; *Spon* and *Wheeler.* Siachal, Schachal, Siechaal, Siacali; *Koempfer.* Jacard; *Delon.* Deeb; *Shaw.* Jaqueparel, in Bengal, and Nari in Madeira, according to other travellers.

Adil, an animal between a wolf and a dog, which the modern Greeks call *Squilachi,* and believe to be the *chryſeos* or *lupus aureus* of the ancient Greeks; *Obſ. de Belon, p.* 163.

Lupus aureus; *Koempfer, Amœnit. Exotic. p.* 413. *fig. p.* 407. *fig.* 3. *Raii Synopf. Quad. p.* 174. *Klein, Quad. p.* 70.

Vulpes Indiæ Orientalis; *Valentin. Miſ. p.* 452.

Canis flavus; *Briſſon, Quad. p.* 171.

Canus aureus, lupus aureus dictus; *Linn. Syſt. Nat. p.* 59.

† I have read, in some of our French chronicles, that, in the reign of Charles IX. many of the court ladies kept adives, instead of lap-dogs.

nearly what the lap-dog, or ſmall water-dog, is to the ſhepherd's dog. However, as this fact is exemplified in a few inſtances only; as the ſpecies of the jackal is not, in general, domeſtic, like that of the dog; and, as differences ſo great ſeldom happen among free ſpecies; we are inclined to believe that the jackal and adive are really two diſtinct ſpecies. The wolf, the fox, the jackal, and the dog, though they approach very near each other, conſtitute four different ſpecies. In the dog-kind, the varieties are extremely numerous. Moſt of theſe originate from their domeſtic condition, to which they have been very early reduced. Man has multiplied the races of this ſpecies by mixing the great and the ſmall, the beautiful and the ugly, the long and the ſhort haired, &c. But, independent of theſe races produced by man, there are ſeveral varieties which ſeem to derive their origin from the climate. The Engliſh bull-dog, the Daniſh dog, the ſpaniel, the Turkiſh dog, the Siberian dog, &c. have received their denominations from the countries which produced them; and they appear to differ from each other more than the jackal does from the adive. Hence the jackals may have undergone ſeveral changes from the influence of different climates; and this idea correſponds with the facts we have collected. From the writings of travellers it appears, that the jackals every where vary in ſize; that in Armenia,

Armenia, Cilicia, Perſia, and in all that part of Aſia called the *Levant*, where this ſpecies is very numerous, troubleſome, and noxious, they are commonly as large as our foxes *, only their legs

* The jacard or adive is as large as a middle-ſized dog, and reſembles the fox in its tail, and the wolf in its muzzle. They are reared in houſes; but their natural diſpoſition is to conceal themſelves, during the day, in the earth, from which they go out in the night only to ſearch for food. They go in packs, put the men to flight, and devour the children. Their cries are plaintive, and a perſon is apt to miſtake the noiſe they make for that of children of different ages mingled together. The dogs hunt and drive theſe animals from the habitations of men; *Voyage de Delon, p.* 109. —— In Perſia there is a ſpecies of fox called *Schacal*, which the natives commonly denominate *Tulki*. They are extremely numerous, and nearly of the ſize of European foxes. The back and ſides are covered with a kind of coarſe wool and long ſtiff hairs. The belly is white as ſnow, the ears black as jet, and the tail is ſmaller than that of our foxes. We heard them roaming during the night around the village where we had put up, and were much troubled with their mournful and inceſſant cries, which reſembled the voices of men in diſtreſs; *Voyage d'Olearius, p.* 531.——The addibo *(adive)* reſembles the wolf in figure, hair, and tail. But it is ſmaller, and even leſs than the fox. It is an extremely voracious, but a ſtupid animal. In the night it roams about, and remains in its hole during the day. In the duſk of the evening, nothing elſe is to be ſeen in the fields. Theſe animals approach travellers, and ſtop to reconnoitre them, without any appearance of fear. They enter the houſes and churches, where they tear and devour every thing they can find. Whatever is made of leather is a favourite morſel. The adive yelps like a fox; and when one cries, all the reſt reply. This inſtinct of crying all together ſeems not to be voluntary, but to proceed from pure neceſſity; for, when one of them enters into a houſe to ſteal, and hears the cries of his companions at a diſtance, he cannot refrain from crying alſo, and by this means detects himſelf; *Voyage du P. Fr. Vincent Marie, ch.* 13. ——A chacali was kept for ten months in a houſe where

legs are ſhorter, and their colour is a brilliant yellow; from which circumſtances they have been called the *yellow* or *golden wolf*. In Barbary, the Eaſt Indies, the Cape of Good Hope, and the other provinces of Africa and Aſia, this ſpecies ſeems to have undergone ſeveral variations. In theſe warm countries, they are large; their hair is rather of a browniſh red than of a fine yellow, and ſome of them are of different colours *. The ſpecies of the jackal is diffuſed over

I lived ſome time. This animal has ſo great a reſemblance to the fox in ſize, figure, and colour, that moſt travellers are at firſt deceived with it. The greateſt difference between them is in the head, the chacali having a head like a ſhepherd's dog with a long muzzle, and in the hair, which is coarſe like that of the wolf. Its colour is alſo ſimilar to that of the wolf; and it ſends forth a ſtench, which infects every thing it touches. ——— This animal is extremely bold and voracious. —— He is not afraid to enter the houſes. ——— When he meets a man, inſtead of flying inſtantly, like other animals, he looks at him with as much boldneſs as if he meant to brave him, and then runs off. He is very miſchievous, and always apt to bite, whatever care is taken to ſoften him by careſſes, or by giving him food. The one formerly mentioned, though taken when very young, and reared with as much attention as a favourite dog, was never rendered perfectly tame: He allowed nobody to touch him, and bit every perſon indiſcriminately. He could never be prevented from leaping on the table, and carrying off every thing he could lay hold of. All the country of Natolia is crowded with theſe chacalis. During the night, they make a hideous noiſe round the villages, not only by barking like dogs, but by a certain ſharp cry which is peculiar to them; *Voyage de Dumont*, *tom.* iv. *p.* 29.

* The jackal which the ſubjects of the King of Comania, near Acra, brought us, was as large as a ſheep; but its legs were

over all Asia, from Armenia as far as Malabar*, and is likewise found in Arabia, Bar-

were taller. Its hair was short and spotted, and its paws prodigiously thick in proportion to its body.—Its head was also very thick, flat, and broad, and each of its teeth exceeded an inch in length.——Its feet are armed with prodigiously strong claws; *Voyage de Bosman, p.* 331.

* In Bengal there are wild dogs, called *Jacqueparels*, or *bawling dogs*, whose hair is red. During the night, they go along the banks of the Ganges barking in a hideous manner. Their voices and their cries are so various and confused, that a man cannot hear himself speak. They turn not aside when the Moors pass near them.——These animals are common in almost all the East India islands; *Voyage d'Innigo de Biervillas, prem. part. p.* 178.——In Madeira there is a kind of wild dog, or rather fox, which the Indians call *Nari*, and the Portuguese *Adiba*.——When I travelled in the night, I heard these animals howling perpetually; *Lettres Edifiantes, recueil* xii. *p.* 98.——In Guzarat, there is a species of wild dog called jackals; *Relation de Mandelslo, apud Olear. tom.* ii. *p.* 234.——In the Malabar country, I saw a great number of jackales or jackals. I saw them also in the woods of Ceylon. They resemble the fox, particularly in the tail.——They are extremely fond of human flesh.——They followed our army, and tore up the dead from their graves.——In the night, we often heard the dismal cries of these animals, which resembled those of enraged dogs.——They cry alternately, as if they answered each other; *Recueil des Voyage de la Compagnie des Indes Orientales, tom.* vi. *p.* 980.—— All the country of Calicut is likewise infested with foxes, *(Jackals,)* which come during the night into the town, and roam about like dogs. In the gardens and highways, no other noise is to be heard; *Voyage du Fr. Pyrard, tom.* i. *p.* 427.——The schecale is a kind of wild dog.——They are so numerous in the environs of Surat, that we could not hear one another, on account of the great noise they made, crying distinctly *oua, oua, oua,* which approaches to the barking of a dog. This animal is fond of dead bodies.——They are likewise frequent in the deserts of Arabia, along the banks of the Tigris and Euphrates, and in Egypt; *Voyage de la Boulaye le Gouz, p.* 254.

bary *, Mauritania, Guiney †, and the Cape of Good Hope. It seems to be destined to supply that of the wolf ‡, which is wanting, or at least is extremely rare, in all warm countries.

However, as the jackals and adives are found in the same countries, as the species could not be degraded by continuing long in a domestic

* The deep is of a darker colour than the fox, though near the same bigness. It yelps every night about the gardens and villages, feeding, as the dubbah does, upon roots, fruits, and carrion. Mr. Ray supposes it to be the lupus aureus of the ancients; though what Oppian describes by that name is larger, and of a much fiercer nature; *Shaw's Travels, p.* 174.

† In Guiney, and still more commonly in the countries of Acra and Acambou, there is a very cruel animal, which our people call *Jackal.*——In the night, they come under the very walls of the fort we have in Acra, in order to carry off from the stables, hogs, sheep, &c.; *Voyage de Bosman, p.* 249. 331.——The wild dogs of Congo, called *Mebbia*, are mortal enemies to all kinds of quadrupeds. They differ little from our hounds. They go in packs of thirty, forty, and sometimes in greater numbers.—— They attack all kinds of animals, and their number generally ensures them of success. They never assail men; *Voyage du P. Zuchel, cité par Kolbe, p.* 293.—— The wild dog of the Cape of Good Hope resembles those of Congo described by P. Zuchel, &c.; *Descript. du Cap de Bonne Esperance, par Kolbe, part.* iii. *p.* 48.——At the Cape there is an animal which approaches the fox. Gesner and others call it the *Cross Fox.* The Europeans of the Cape give it the name of *Jackal*, and the Hottentots that of *Zenlie* or *Kenlie*; *Id. ib. p.* 62.

‡ I remarked, that there are no wolves in Hyrcania, nor in the other provinces of Persia; but that we every where meet with the *chacal*, whose cry is frightful. It is particularly fond of dead bodies, which it tears out of the graves; *Voyage de Chardin, tom.* ii. *p.* 29.

state,

ſtate, and as there is always a conſiderable difference both in the ſize and diſpoſitions of theſe animals, we ſhall regard them as diſtinct ſpecies, till it be proved by facts that they intermix and produce together. Our conjecture concerning the difference of theſe two ſpecies is the better founded, as it ſeems to accord with the opinion of the ancients. Ariſtotle, after mentioning the wolf, the fox, and the hyæna, gives ſome obſcure intimations with regard to two other animals of the ſame genus, the one under the name of the *panther*, and the other under that of *thos*. The tranſlators of Ariſtotle have rendered *panther* by *lupus canarius*, and *thos* by *lupus cervarius*. From this interpretation, it is obvious, that they conſidered the panther and thos to be animals of the ſame ſpecies. But I demonſtrated, under the article *Lynx*, that the *lupus cervarius* of the Latins is not the *thos* of the Greeks. This *lupus cervarius* is the ſame with the *chaus* of Pliny, and with our lynx, which has not a ſingle character that agrees with the *thos*. Homer, when celebrating the proweſs of Ajax, who alone attacked a band of Trojans, in the midſt of whom Ulyſſes found himſelf engaged, after being wounded, compares him to a lion, who ſuddenly falls upon a troop of *thos* collected round a ſtag at bay, diſperſes, and purſues them, as mean and daſtardly animals. The commentator of Homer interprets the word *thos* by *panther*, which, he ſays, is a kind of weak,

timid wolf. Thus the thos and panther have been regarded as the ſame animal by ſeveral ancient Greeks. But Ariſtotle appears to have diſtinguiſhed them, though he has not aſſigned to them different characters: 'The internal parts of 'the *thos*,' ſays he, 'are ſimilar to thoſe of the 'wolf*.... They copulate like dogs †, and 'produce two, three, or four young, which are 'born blind. The body and tail of the thos are 'longer than thoſe of the dog; but, though the 'former is not ſo tall, he is extremely nimble, 'and leaps to a great diſtance..... The 'lion and thos are enemies ‡, becauſe they both 'feed upon fleſh, and muſt, therefore, diſpute 'about their prey.... The thos loves men §, 'and never attacks them; neither does he ſeem 'to be much afraid of them. He fights with 'the dog and the lion. For this reaſon the lion 'and thos are never ſeen in the ſame places. 'The ſmalleſt thos are the beſt. There are 'two ſpecies of them, and ſome extend them to 'three.' Ariſtotle ſays no more on the ſubject of the thos, and he ſays ſtill leſs concerning the panther. It is mentioned only in one paſſage, namely, in the 35th chapter of the 16th book of his hiſtory of animals: 'The pan-'ther produces four young, which are blind

* Ariſtot. Hiſt. Anim. lib. ii. cap. xvii.
† Idem, lib. vi. cap. xxxv.
‡ Idem, lib. ix. cap. i.
§ Idem, lib. ix. cap. xliv.

'at

'at birth, like the young wolves.' From comparing theſe paſſages with that of Homer, and thoſe of other Greek authors, it appears to be almoſt certain, that the thos of Ariſtotle is the large jackal, and that the panther is the ſmall jackal, or adive. We ſee that he admits the exiſtence of two ſpecies of thos; that he mentions the panther but once, and when treating of the thos: It is therefore probable, that this panther is the ſmall kind of thos; and this probability becomes almoſt a certainty from the teſtimony of Oppian *, who ranks the panther among the number of ſmall animals, ſuch as the cats and dormice.

Hence the thos is the jackal, and the panther the adive: And, whether they conſtitute two ſpecies, or but one, it is certain, that all the ancients have ſaid, with regard to the thos and panther, applies to the jackal and adive, and to no other animals. If we have remained unacquainted with the true meaning of theſe names till now, it muſt be aſcribed to the ignorance of the tranſlators, and of our modern naturaliſts.

Though the ſpecies of the wolf approaches near to that of the dog, yet the jackal is interpoſed between them. *The jackal or adive*, as Belon remarks, *is an animal between a wolf and a dog*. With the ferocity of the wolf, he poſſeſſes a portion of the familiarity of the dog.

* Oppian. de Venatione, lib. ii.

His

His voice is a howling, mixed with barks and groans *. He is more clamorous than the dog, and more voracious than the wolf. He never goes alone, but always in packs of twenty, thirty, or forty. They aſſemble every evening for the purpoſes of war, and of hunting. They feed upon ſmall animals, and render themſelves formidable to the larger ſpecies by their numbers. They attack every kind of cattle and poultry almoſt in the ſight of men. They enter with inſolence and boldneſs into the ſheep-folds, the ſtables, and the cow-houſes; and, when they find nothing better, they devour the leather of the harneſſing, boots, and ſhoes, and carry off what they have not time to ſwallow. When live prey fails them, they dig up the bodies of men from their graves. The inha-

* It is of a fine yellow colour, ſmaller than a wolf, goes always in packs, and yelps during the whole night. . . It is ſo voracious, and ſo complete a thief, that it carries off not only what is good to eat, but hats, ſhoes, bridles, and every thing it can lay hold of; *Obſ. de Belon, p.* 163.—Jackal pene omnem orientem inhabitat; beſtia aſtuta, audax, et furaciſſima eſt. . . Interdiu circa montes latet, noctu pervigil et vagus eſt: Catervatim prædatum excurrit in rura et pagos. . . . Ululatum noctu edunt execrabilem ejulatui humano non diſſimilem, quem interdum vox latrantium quaſi canum interſtrepit: Unique inclamanti omnes acclamant, quotquot vocem e longinquo audiunt; *Koempfer, Amœnit. Exotic. pag.* 413.—About the canal of the Black Sea, there are many ſiacalles or wild dogs, which reſemble foxes, particularly in their muzzle. It is thought that they are engendered between wolves and dogs. In the evening and night they make frightful howlings. . . They are very miſchievous, and as dangerous as wolves; *Voyage de Corneille le Brun, p.* 56.

bitants

bitants are obliged to ſtick the earth of their ſepulchres full of large ſpines, in order to prevent theſe animals from ſcraping and digging; for a thickneſs of ſeveral feet of earth is not ſufficient to prevent them from accompliſhing their purpoſe *. They go in packs, accompany this exhumation with mournful cries, and, when once accuſtomed to human bodies, they never fail to frequent the church-yards, to follow armies, and to attend the caravans. They may be conſidered as the ravens among quadrupeds. The moſt putrid fleſh does not diſguſt them. Their appetite is ſo perpetual and ſo vehement, that the drieſt leather, ſkins, tallow, and even the ordure of animals, are equally welcome to them. The hyæna has the ſame taſte for putrid fleſh: It likewiſe digs dead bodies out of their graves; and, from this practice, theſe animals, though very different from each other, have often been confounded. The hyæna is a ſolitary, ſilent, ſavage animal, which, though much ſtronger than the jackal, is leſs troubleſome, and contents

* The adives are very fond of putrid bodies, and particularly of human bodies, When the Chriſtians inter any perſon in the fields, they make a very deep pit: But even this precaution is inſufficient, unleſs the earth be beat hard, and mixed with ſtones and ſpines, which wound the animals, and prevent them from digging farther. In the Arabian language, the name *adive* ſignifies a *wolf*. Its figure, its hair, and its voracity, are analogous to this name; but its ſize, its familiarity, and its ſtupidity, convey a different idea of it; *Voyage du P. Fr. Vincent Marie*, *ch.* xiii.

itſelf

itſelf with devouring the dead, without diſturbing the living. But all travellers complain of the cries, the robberies, and the gluttony of the jackal *, which unites the impudence of the dog with the daſtardlineſs of the wolf, and, participating of the nature of each, ſeems to be an odious creature, compoſed of all the bad qualities of both.

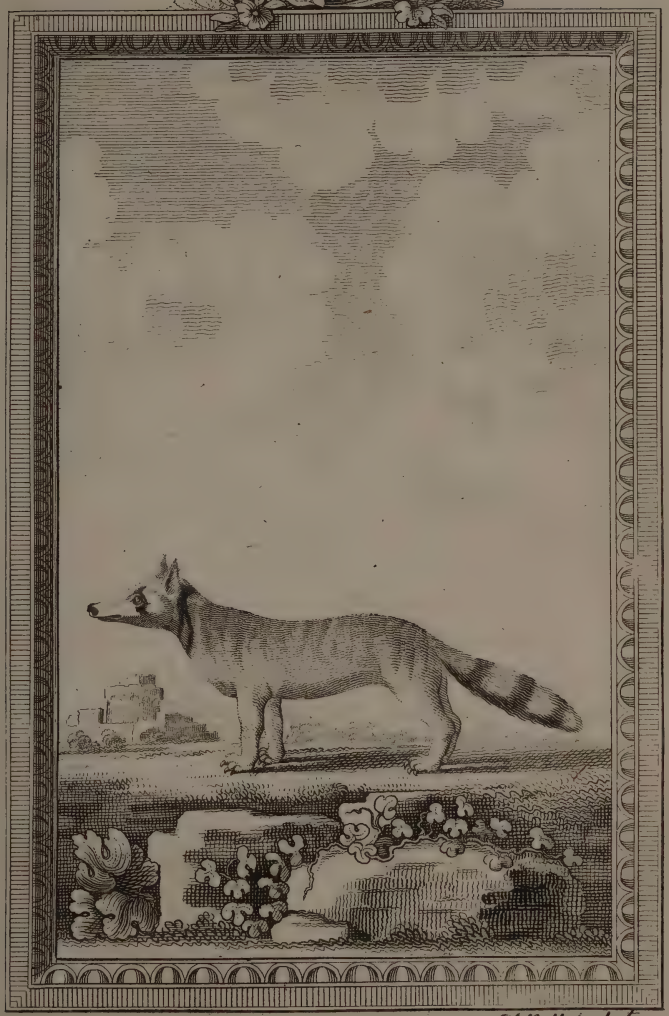
SUPPLEMENT.

I Here give the figure of a jackal, which ſeems to be the ſmall jackal or *adive*. The drawing was ſent to me from England, under the ſimple denomination of *jackal*. Mr. Bruce aſſures me, that the ſpecies here repreſented is common in

* Jackals are in ſo great plenty about the gardens, that they paſs in numbers, like a pack of hounds in full cry, every evening, giving not only diſturbance by their noiſe, but making free with the poultry, and other proviſions, if very good care is not taken to keep them out of their reach; *Ruſſel's Natural Hiſtory of Aleppo.* —— Around Mount Caucaſus there are many jackals. This animal reſembles the fox. He digs dead bodies out of their graves, and devours animals and carrion. In the Eaſt, the dead are interred without coffins, or clothes of any kind. I have often ſeen large ſtones rolled upon graves, to prevent theſe animals from devouring the bodies. Mingrelia is infeſted with jackals. They frequently ſurround the houſes, and make dreadful howlings: But, what is worſe, they make great havock among the cattle and horſes; *Voyage de Chardin, p.* 76.

Barbary,

Plate CCXLI.



A. Bell Sculpt.

JACKAL-ADIVE.

Barbary, where it is called *thaleb;* and, as the figure has no reſemblance to the deſcription we have given of the jackal, I am perſuaded that it is the *adive*, or ſmall jackal, which differs from the large kind both in figure and in manners; for the ſmall ſpecies may be tamed, and kept in a domeſtic ſtate; and I never heard that the large jackal was ever rendered domeſtic.

The ISATIS, or ARCTIC DOG *.

IF a number of reſemblances, joined to a perfect conformity of internal parts, were ſufficient to conſtitute unity of ſpecies, the wolf, the fox, and the dog, would form but one; for the reſemblances are more numerous than the differences, and the ſimilarity of the internal parts is complete. Theſe three animals, how-

* Arctic dog with a ſharp noſe; ſhort rounded ears, almoſt hid in the fur; long and ſoft hair, ſomewhat woolly; ſhort legs; toes covered on all parts, like that of a hare, with fur; tail ſhorter than that of the common fox, and more buſhy. This animal is of a bluiſh gray, or aſh-colour, and ſometimes white. The young of the gray are black before they come to maturity. The hair is much longer in winter than ſummer, as is uſual with animals of cold climates; *Pennant's Synopſ. of Quad. p.* 155.

Iſatis, the name given by Gmelin to this animal; it is called *Peſzi* in the Ruſſian language; *Voyage de Gmelin, tom.* iii. *p.* 215.

Vulpes alba; Vulpes crucigera; *Aldrov. de Quad. Digit. p.* 221.

Canis hieme alba, æſtate ex cinereo cæruleſcens; *Briſſon. Quad. p.* 174.

Fox; *Marten's Spitſberg. p.* 100. *Egede Greenl. p.* 62. *Crantz Greenl. vol.* i. *p.* 72.

Aſhen-coloured fox; *Schoeffer, Lapland, p.* 135.

Canis lagopus, cauda recta, apice concolore; *Linn. Syſt. Nat. p.* 59.

Fial racka; *Faun. Suec.* No. 8.

Bahus; *Kalm, p.* 236.

Iſatis; *Nov. Com. Petrop. tom.* v. *p.* 358.

ever, not only conſtitute three diſtinct ſpecies, but are ſo diſtant from each other, as to admit intermediate ſpecies. The jackal is an intermediate ſpecies between the dog and wolf; and the iſatis is placed between the fox and dog. The iſatis has hitherto been regarded as a variety of the fox. But the deſcription given of it by Gmelin demonſtrates it to be a different ſpecies.

The iſatis is common in all the northern regions bordering on the frozen ſea, and is never found on this ſide of the 69th degree of latitude. In the figure of the body, and the length of the tail, he is perfectly ſimilar to the fox; but his head has a greater reſemblance to that of the dog. His hair is ſofter than that of the common fox, and his fur is ſometimes white, and ſometimes of a bluiſh aſh-colour. The head is ſhort in proportion to the body; it is broad near the neck, and is terminated by a ſharp muzzle. The ears are almoſt round. He has five toes and five claws on the fore-feet, and only four on thoſe behind. The penis of the male is ſcarcely ſo thick as a gooſe quill. The teſticles are as large as almonds, and are ſo concealed with the hair, that it is difficult to perceive them. The hair over the whole body is about two inches long, ſmooth, buſhy, and ſoft as wool. The noſtrils and under lip are naked, and the ſkin of theſe parts is black.

In

In both male and female, the ſtomach, viſcera, inteſtines, and ſpermatic veſſels, are ſimilar to thoſe of the dog: There is even a bone in the penis of the male, and the whole ſkeleton reſembles that of a fox.

The voice of the iſatis partakes of the barking of a dog and the yelping of a fox. The merchants who deal in furs diſtinguiſh two kinds of iſatis, the one white, and the other of a bluiſh aſh-colour. The latter are moſt eſteemed, and their price advances in proportion to their blueneſs or brownneſs. This difference of colour is not ſufficient to conſtitute a difference of ſpecies; for M. Gmelin was aſſured by the moſt experienced hunters, that, in the ſame litter, ſome of the young are white, and others aſh-coloured.

The iſatis is an animal peculiar to the northern regions. He prefers the coaſts of the frozen ſea, and the banks of the rivers which fall into it. He loves open countries, and never frequents the woods. He is found in the coldeſt and moſt naked mountains of Norway, Lapland, Siberia, and Iceland *. Theſe animals copulate in the month of March; and, their organs of generation being formed like thoſe of the dog, they cannot ſeparate for ſome time. Their rut-

* It is probably by ſailing on boards of ice that the foxes have found their way into Iceland, where they are very numerous. Some of them are black; but they are commonly gray or blue in ſummer, and white in winter; in which laſt ſeaſon their fur is beſt; *Anderſon's Nat. Hiſt. of Iceland, tom.* i. *p.* 56.

ting

ting ſeaſon laſts fifteen days, or three weeks, during which they are always in the open air; and afterwards they retire to their holes, which are narrow, very deep, and have ſeveral entries. They keep their holes clean, and make beds of moſs in them. The time of geſtation, like that of the bitch, is about nine weeks. The females bring forth about the end of June or beginning of May, and generally produce ſix, ſeven, or eight at a litter *. Thoſe which are to be white, are yellowiſh at birth, and thoſe which are to be of a bluiſh aſh-colour, are blackiſh, and their hair is then very ſhort. The mother ſuckles and attends them in the hole during five or ſix weeks; after which, ſhe makes them go out, and brings them victuals. In the month of September, their hair is more than half an inch long. At this period, thoſe which are to be white, are almoſt entirely ſo, except a brown band along the back, and another acroſs the ſhoulders. It is then that the iſatis is called the *croſs-fox* †. But this brown croſs diſappears before winter, when they are entirely white, and their hair more than two inches in length. About the month of May, the hair begins to fall

* M. Gmelin ſays, from the teſtimony of hunters, that theſe animals ſometimes produce twenty or twenty-five at one litter. But this fact is extremely ſuſpicious.

† From this circumſtance, it is probable that the *vulpes crucigera* of Geſner, *Icon. Quad. p.* 190. and of Rzaczinſki, *Hiſt. Nat. Pol. p.* 231. is the ſame animal with the iſatis.

off, and the moulting is finiſhed in July: Hence the fur is good in winter only.

The iſatis lives upon rats, hares, and birds; and, in ſeizing them, he uſes as much addreſs as the fox. He ſwims acroſs lakes in queſt of the neſts of ducks and of geeſe, and eats the eggs and the young. In theſe cold and deſert regions, he has no enemy but the glutton, who lies in ambuſh for him.

As the wolf, the fox, the glutton, and the other animals which inhabit the northern regions of Europe and Aſia, have paſſed from the one continent to the other, and are found in America, the iſatis ought likewiſe to be found there; and I preſume, that the ſilver-gray fox of North America, of which Cateſby * has given a figure, is the iſatis, and not a ſimple variety of the fox.

SUPPLEMENT.

IN a letter from London, dated the 19th day of February 1768, Mr. Colinſon communicates the following notice:

'My friend M. Paul Demidoff, a Ruſſian, who 'is an admirer of your works, ſends you a draw-'ing of an undeſcribed animal, called *Coſſac*. It

* Nat. Hiſt. of Carolina, tom. ii. fig. p. 78.

'was

Plate CCXLII.

A. Bell Sculp.t

ISATIS.

'was brought from the vaſt deſerts of Tartary, 'ſituated between the rivers Jaïck, Emba, and 'the ſources of the Irtiſh. Theſe coſſacs are ſo 'numerous in that part of the country, that the 'Tartars tranſport annually 50,000 of their 'ſkins to Oremburgh, from whence they are 'carried to Siberia and Turkey. From the point 'of the muzzle to the origin of the tail, this 'animal is about one foot and eight inches in 'length; and his tail is ten inches long.

'The ſhape of the head, the mild aſpect, and 'the barking of this animal, ſeem to bring him 'near to the dog. His tail, however, and his 'fine ſoft fur, make him approach the fox. His 'blood is ardent, and his breath has a diſagree-'able odour, like that of the jackal and wolf.'

From the drawing, and ſtill more from the ſhort deſcriptions of M. Demidoff and M. Gmelin, this animal appears to be the iſatis; and, for that reaſon, I have cauſed it to be engraven.

The GLUTTON*.

THE glutton, with his groſs body and ſhort legs, is nearly of the figure of the badger; but he is double the ſize. His head is ſhort, his eyes ſmall, his teeth very ſtrong, his body ſquat, and his tail rather ſhort than long, and well furniſhed with hair at the extremity. He is black on the back, and of a browniſh red on the flanks. His fur is exceedingly beautiful, and in great requeſt. He is common in Lapland, and in all the countries bordering on the

* *Glouton* in French; *jerff* in Swediſh; *wilfraſs* in German; *roſemack* in Sclavonian; *carcajou* in Canada; *quincajou* in other parts of North America.

Inter omnia animalia quæ immani voracitate creduntur inſatiabilia, *gulo*, in partibus Sueciæ ſeptentrionalis præcipuum ſuſcepit nomen, ubi patrio ſermone, *jerff*, dicitur, et lingua Germanica, *wilfraſs*; Sclavonice, *roſomaka*, a multa commeſtione; Latine vero non niſi fictitio nomine *gulo*, videlicet a gulositate, appellatur; *Olai Magn. Hiſt. de Gent. Sept. p.* 138.

Gulo a voracitate inſatiabili; the Glutton; *Charleton, Onom. p.* 15.

Roſomaka; *Euſ. Nieremb. Hiſt. Nat. Peregrin. p.* 188. *Rzaczinſki, Hiſt. Nat. Pol. p.* 339.

Gulo wielfraſs, boophagus, magnus vorator, roſomacka; *Klein. Quad. p.* 83.

Muſtela gulo, pedibus fiſſis, corpore rufo-fuſco, medio dorſi nigro; *Linn. Syſt. Nat. p.* 67.

Jarff, filfreſs; *Faun Seuec. No.* 14.

Hyæna; *Briſſon, Quad. p.* 169. *Yſbrandt-Ides Trav. Harris's Collect. vol.* ii. *p.* 923.

northern

northern ocean, both in Europe and Asia. In Canada, and other parts of North America, he is found under the name of *carcajou*. It is probable, that the animal found near Hudson's Bay, called *quick-hatch*, or *wolverene*, by Mr. Edwards *, is the same with the Canadian carcajou, and the European glutton. It is also probable, that the animal mentioned by Fernandez, under the name of *tepeytzcuitli*, or *mountain dog*, is the glutton, whose species has been diffused as far as the desert mountains of New Spain †.

Olaus Magnus seems to be the first author who takes notice of this animal. He says ‡, that it is of the size of a large dog; that it has the ears and face of a cat, strong feet and claws, long, brown, bushy hair, and a rough tail like that of the fox, but shorter. The glutton, according to Schoeffer §, has a round head, strong sharp teeth, like those of the wolf, black hair, and a thick body and short legs, like those of the otter. La Hontan ||, who first mentioned the carcajou of North America, remarks, 'Figure to yourself a double-sized badger, which

* Edwards's History of Birds, p. 103.

† Animal est parvi canis magnitudine audaciſſimumque; aggreditur enim cervos et quandoque etiam interficit; corpus universum nigrum: Pectus ac collum candens, pili longi, et cauda longa, et caninum quoque caput, unde nomen; *Fernandez, Hist. Anim. Nov. Hisp. pag.* 7. *cap.* xxi.

‡ Olaus Magnus de Gent. Septent, p. 138.

§ Hist. de la Lapponie, par J. Schoeffer, p. 314.

|| Voyage de la Hontan, tom. i. p. 96.

'is the moſt perfect idea I can give you of this 'animal.' According to Sarrazin *, who probably had ſeen only young ones, the carcajous exceed not two feet in length, and their tail is eight inches. 'They have,' ſays he, 'a very 'thick ſhort head, ſmall eyes, and very ſtrong 'jaws, furniſhed with thirty-two ſharp teeth.' The quick-hatch of Edwards †, which appears to be the ſame animal, was, this author remarks, double the ſize of the fox: Its back is arched, its head low, its legs ſhort, it belly almoſt trailing on the ground, and its tail of a middling length, and buſhy toward the extremity. All theſe authors agree, that this animal is only to be found in the northern regions of Europe, Aſia, and America. M. Gmelin ‡ is the only writer who ſeems to think that the glutton travels into warm countries. But this fact appears to be very ſuſpicious, if not altogether falſe. Gmelin, like ſome other naturaliſts §, has perhaps confounded the hyæna of the South with the glutton of the North, which, though they reſemble each other in natural diſpoſitions, and particularly in voraciouſneſs, are very different animals.

* Hiſt. de l'Acad. des Sciences, année 1713, p. 14.

† Edwards's Hiſtory of Birds, p. 103.

‡ The glutton is the only animal, which, like man, can live equally well under the Line and under the Pole. He is every where to be ſeen: He runs from ſouth to north, and from north to ſouth, provided he can find any thing to eat; *Voyage de Gmelin, tom.* iii. *p.* 492.

§ Briſſon, Regn. Anim. p. 235.

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The legs of the glutton are not made for running; he even walks ſlow. But this defect of nimbleneſs he ſupplies with cunning. He lies in wait for animals as they paſs. He climbs upon trees, in order to dart upon his prey, and ſeize it with advantage. He throws himſelf down upon elks and rain-deer, and fixes ſo firmly on their bodies with his claws and teeth, that nothing can remove him. In vain do the poor victims fly, and rub themſelves againſt trees. The enemy, attached to their crupper or neck, continues to ſuck their blood, to enlarge the wound, and to devour them gradually, and with equal voracity, till they fall down *. It is inconceivable how long the glutton can eat, and how much fleſh he can devour at a meal.

What is related by travellers, concerning this animal, is perhaps exaggerated. But, though a great part of their narrations were rejected,

* The glutton is a carnivorous animal, ſomewhat leſs than the wolf. His hair is coarſe, long, and of a brown colour, approaching to black, eſpecially on the back. He climbs upon a tree to watch for his prey; and, when any animal paſſes, he ſprings down upon its back, fixes himſelf firmly with his claws, and continues to gnaw with his teeth, till the poor animal, after many fruitleſs efforts to get rid of ſo troubleſome a gueſt, at laſt falls down, and becomes a victim to this crafty enemy. Three ſtrong greyhounds are neceſſary to kill the glutton. The Ruſſians uſe the glutton's ſkin for muffs, and borders to their caps; *Relation de la Grande Tartarie, p.* 8.

what remains * is ſufficient to convince us, that the glutton is much more voracious than any of our carnivorous animals: From this circumſtance he has been called the *vulture of quadrupeds*. More inſatiable and rapacious than the wolf, if endowed with equal agility, the glutton would deſtroy all the other animals. But he moves ſo heavily, that the only animal he is able to overtake in the courſe is the beaver, whoſe cabbins he ſometimes attacks, and devours the whole, unleſs they quickly take to the water †; for the beaver outſtrips him in ſwimming. When he perceives that his prey has eſcaped, he ſeizes the fiſhes; and, when he can find no living creature to deſtroy, he goes in queſt of the dead, whom he digs up from their graves, and devours with avidity.

Though the glutton employs conſiderable art and addreſs in ſeizing other animals, he ſeems

* Hoc animal voraciſſimum eſt; reperto namque cadavere, tantum vorat, ut violento cibo corpus inſtar tympani extendatur; inventaque anguſtia inter arbores ſe ſtringit ut violentius egerat: Sicque extenuatum revertitur ad cadaver, et ad ſummum uſque repletur, iterumque ſe ſtringit anguſtia priore, &c.; *Olai Magni Hiſt. de Gent. Sept. pag.* 138.

† The carcajou is a ſmall animal, but very ſtrong and fierce. Though carnivorous, he is ſo ſlow and heavy, that he may be ſaid rather to trail upon the ſnow, than to walk. The beaver is the only animal he is able to overtake; and this exploit he can perform in ſummer only, when the beavers are out of their cabbins: But, in winter, he endeavours to demoliſh their cabbins, and ſeize the inhabitants, which he is ſeldom able to accompliſh; becauſe the beavers ſecure their retreat under the ice; *Hiſt. de l'Acad. des Sciences, année* 1713. *p.* 14.

to

to poſſeſs no other talents but thoſe which relate to appetite. It would appear that he even wants the common inſtinct of ſelf-preſervation. He allows himſelf to be approached by men, or comes up to them *, without betraying the ſmalleſt

* The workmen perceived at a diſtance an animal approaching with ſlow and ſolemn ſteps. Some of them imagined it to be a bear, and others a glutton. They advanced, and found that it was a glutton. Having given it ſome ſevere blows with a cudgel, they ſeized it alive, and brought it to me. . . . . After the many reports I had for ſeveral years heard from the Siberian hunters, concerning the addreſs of the glutton in ſeizing other animals, and ſupplying, by cunning, that ſwiftneſs which Nature has denied him, and in avoiding the ſnares of men, I was greatly ſurpriſed to ſee this one come as deliberately up to us, as if he had been in queſt of his own deſtruction. Yſbrandt-Ides calls the glutton a miſchievous animal, which lives on fleſh only. 'He is 'accuſtomed,' this author remarks, 'to conceal himſelf in the 'trees, and to lie in ambuſh, like the lynx, till a ſtag, a rain-'deer, a roebuck, a hare, &c. paſſes below, and then darts 'down, like an arrow, upon the animal, ſinks his teeth into its 'body, and gnaws the fleſh till it expires; after which, he de-'vours it at his eaſe, and ſwallows both the hair and the ſkin. 'A way-wode, who kept a glutton for his pleaſure, threw it one 'day into the water, and let looſe two dogs at it. But the glut-'ton ſoon fixed upon the head of one of the dogs, and kept it 'under the water till the animal was ſuffocated.' . . . The addreſs employed by the glutton, continues M. Gmelin, in ſeizing animals, is confirmed by all the hunters. . . . Though he devours all kinds of animals, whether alive or dead, he prefers the rain-deer. . . . . He watches large animals like a robber on the highways, or he ſurpriſes them while aſleep. . . . He goes in queſt of the ſnares laid by the hunters for different ſpecies of animals; but he never allows himſelf to be entrapped. . . . The hunters of the blue and white foxes (iſatis), which frequent the coaſts of the frozen ſea, complain much of the miſ-

chief

ſmalleſt apprehenſion. This indifference, which ſeems to be the effect of imbecility, proceeds, perhaps, from a different cauſe. It is certain, that the glutton is not ſtupid, ſince he finds means to ſatisfy his appetite, which is always vehement and preſſing. Neither is he deficient in courage, ſince he indiſcriminately attacks all animals he meets with, and betrays no ſymptoms of fear at the approach of man. Hence, if he wants attention to himſelf, it proceeds not from indifference to his own preſervation, but from the habit of ſecurity. As he lives in a country which is almoſt deſert, he ſeldom ſees men, who are his only enemies. Every time he tries his ſtrength with other animals, he finds himſelf their ſuperior. He goes about with perfect confidence, and never diſcovers the ſmalleſt mark of fear, which always ſuppoſes ſome dolorous event, ſome experience of weakneſs. Of this we have an example in the lion, who never turns away from man, unleſs he has experienced the force of his arms: And the glutton, trail-

chief done them by the glutton. . . . . With much propriety they call him the *glutton*; for the quantity he eats is incredible. Though I frequently inquired of profeſſed hunters, I never heard that this animal, when gorged, ſqueezed himſelf between two cloſe trees, in order to force out the contents of his ſtomach, and to make room for a freſh gratification of his inſatiable appetite. This appears to have been the fable of a naturaliſt, or the fiction of a painter; *Voyage de Gmelin, tom.* iii. *p.* 492.—*Nota,* Olaus firſt put this fable in writing, and Geſner copied the figure of it, which had been deſigned by a painter.

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ing along the ſnows of his deſert climate, remains always in perfect ſafety, and reigns, like the lion, not ſo much by his own ſtrength, as by the weakneſs of the animals around him.

The iſatis is not ſo ſtrong, but much more nimble than the glutton, whom it ſerves as a provider. The glutton follows the iſatis in the chaſe, and often carries off the whole, or a part of its prey; for, when the glutton arrives, the iſatis, to avoid its own deſtruction, flies off with precipitation. Both theſe animals dig holes in the earth; but their other manners are different. The iſatis often go in packs: But the glutton travels alone, or ſometimes with his female. The male and female are generally found together in the ſame hole. Even the moſt courageous dogs * fear to approach, or to combat the glutton. He defends himſelf with his claws and feet, with which he inflicts mortal wounds. But, as he cannot eſcape by flight, he is eaſily diſpatched by the hunters.

The fleſh of the glutton, like that of all rapacious animals, is very bad †. He is hunted only

* Via vix conceditur ut a canibus apprehendatur, cum ungulas, denteſque adeo acutos habeat, ut ejus congreſſum formident canes qui in ferociſſimos lupos vires ſuas extendere ſoient; *Olai Mag. Hiſt. de Gent. Sept. pag.* 139.

† Caro hujus animalis omnino inutilis eſt ad humanam eſcam, ſed pellis multum commoda ac pretioſa. Candet enim fuſcata nigredine inſtar panni damaſceni diverſis ornata figuris, atque pulchrior in aſpectu redditur, quo artificum diligentia

only for his ſkin, which makes a moſt magnificent fur *. It is only excelled by the furs of the ſable and black fox; and, when well choſen, and properly prepared, it is ſaid to have a finer luſtre than any other, and, upon a beautiful black ground-colour, to reflect and variegate the light, like damaſk ſilk †.

SUPPLEMENT.

I AM now enabled to give a figure of the glutton. This animal was ſent to me alive from the moſt northern parts of Ruſſia; and yet he lived more than eighteen months at Paris. He was ſo tame, that he diſcovered no ferocity, and

ligentia et induſtria colorum conformitate in quorumque veſtium genere fuerit coadunata; *Olai Mag. Hiſt. de Gent. Sept. pag.* 139.

* The glutton is ſaid to be an animal peculiar to the north. . . . It is of a blackiſh colour; and the hair is as long as that of the fox, but much finer and ſofter; which renders the ſkins very precious even in Sweden; *Appollon. Megabeni Hiſt. Gulonis.*

† The gluttons are common in Lapland. . . . The ſkin is extremely black, and the hair reflects a kind of ſhining whiteneſs, like the flowered ſattins and damaſks. Some people compare it to the ſkin of the ſable, except that the hair of the latter is ſofter and more delicate. This animal lives both on the earth and in the water, like the otters. . . . But the glutton is much larger, and more voracious than the otter. . . . He not only hunts wild and domeſtic animals, but even fiſhes; *Hiſt. de la Lapponie, par Schoeffer, p.* 314.

did

did not injure any perſon. His voracity has been as much exaggerated as his cruelty. He indeed eat a great deal; but, when deprived of food, he was not importunate. The animal is very well repreſented in the plate; but we ſhall likewiſe add a deſcription of him. He is two feet two inches long, from the point of the noſe to the origin of the tail. The muzzle, and as far as the eye-brows, is black. The eyes are black and ſmall. From the eye-brows to the ears, the hair is a mixture of white and brown. The ears exceed not an inch in length, and the hair on them is ſhort. Below the under jaw, as well as between the fore-feet, the hair is ſpotted with white. The length of the fore-legs is eleven inches, and that of the hind one foot. The tail, including four inches of hair at its extremity, is eight inches long. The four legs, the tail, the back, as well as the belly, are black. Near the navel is a white ſpot, and the organs of generation are reddiſh. The under hair, or down, is white: His fore-feet, from the heel to the extremity of the claws, are three inches nine lines in length. The five claws are very crooked and well ſeparated. The middle claw is an inch and a half long. There are five calloſities under the toes; four of them form a kind of ſemicircle below the foot, the other is on the heel. On the hind-feet, there are five claws, nine calloſities, and no heel. The breadth

of

of the fore-feet is two inches and a half. The length of the hind-feet is four inches nine lines, and their breadth two inches nine lines. He has ſix cutting teeth in the upper jaw, of which one on each ſide is larger than the other four; and five grinders, two of which are much larger than the other three. In the under jaw, he has five grinders, one of which is very thick. There are a few hairs, about two inches long, round the mouth, and above the eyes.

This animal is pretty mild. He avoids water, and dreads horſes, and men dreſſed in black. He moves by a kind of leaps; and eats pretty voraciouſly. After taking a full meal, he covers himſelf in his cage with ſtraw. When drinking, he laps like a dog. He utters no cry. After drinking, with his paws he throws the remainder of the water on his belly. He is almoſt perpetually in motion. If allowed, he would devour more than four pounds of fleſh every day. He eats no bread; and devours his food ſo voraciouſly, and almoſt without chewing, that he is apt to choke himſelf.

The glutton is common in moſt of the northern regions of Europe, and even of Aſia; but, in Norway, according to Pontoppidan, he is chiefly confined to the dioceſe of Drontheim. This author remarks, that the ſkin of the glutton is very valuable; that he is not ſhot with fire-arms, to prevent his ſkin from being damaged;

maged; and that the hair is ſoft, and of a black colour, ſhaded with brown and yellow *.

We have likewiſe given the figure of an American animal, a ſtuffed ſkin of which was ſent to M. Aubry, curate of St. Louis, under the denomination of *Carcajou*. But it has no affinity to that animal, which we remarked was the ſame with our European glutton; for, as its claws are not adapted for tearing prey, but for digging the earth, we conſider it as a neighbouring ſpecies, or even as a variety, of the badger. When compared with the figure we have given of the badger, the reſemblance is apparent; from which it differs, however, by having only four toes on the fore-feet: But the fifth toe, which was apparently wanting, might have been deſtroyed in this dried ſkin. In this character, it differs equally from the carcajou and the glutton; becauſe both of them have five toes on the fore-feet. Hence it is doubtful whether this animal be the true carcajou. We ſhall here add a deſcription of the ſtuffed ſkin, which is very well preſerved in the cabinet of M. Aubry. He was aſſured that it was brought from the country of the Eſkimaux. From the end of the muzzle to the origin of the tail, it was two feet two inches long. Though it has a great reſemblance to the badger, it differs from him in the colour and quality of the hair, which is ſofter, longer, and more ſilky; and, by this character

* Pontoppidan's Natural Hiſtory of Norway.

alone,

alone, it approaches to the carcajou, or the glutton of Europe. It is nearly of the colour of the lynx, being grayiſh white, with white ſtripes on the head, but different from thoſe of the badger. The ears are ſhort and white. It has thirty-two teeth, ſix inciſors, two large canine teeth, and four grinders on each ſide; but the badger has only ſix grinders. The hairs on the body, which are commonly four and a half or five inches long, are of four colours, namely, from the root to near the middle, they are a bright brown, then a bright yellow, then black, till near the point, which is white. The under part of the body is covered with white hairs. On the legs the hair is of a deep brown colour. There are four toes only on the fore-feet, and five on thoſe behind. The claws of the fore-feet are very large; the longeſt on the fore-feet are ſixteen lines, and the longeſt on the hind-feet only ſeven. The trunk of the tail is three inches eight lines in length, and it is terminated and ſurrounded by long yellow hairs.

I am convinced that the American carcajou is the ſame animal with the European glutton, or, at leaſt, that it is a ſpecies very nearly allied to the glutton. But I muſt remark, that I committed a miſtake, occaſioned by a ſimilarity of names, and ſome natural habits, common to two different animals. I imagined that the kinkajou was the ſame animal with the carcajou. This error I diſcovered by ſeeing two animals, the one

one at the fair of St. Germain, in 1773, announced by a bill as *an animal unknown to all the naturaliſts*, which was true. Another, altogether ſimilar, is now alive at Paris, in the poſſeſſion of M. Chauveau, who brought it from New Spain. We believe it to be the true kinkajou, and have here given a figure of it. M. Chauveau imagined that it might be an acouchi or a coati. He remarks, indeed, that it has neither the long noſe nor the annulated tail of the coati; but that it has the ſame hair, the ſame members, the ſame number of toes, and the ſame canine teeth, which are angular and chamfered on the ſides. M. Chauveau acknowledges, that it differs from the coati by its prehenſile tail, with which, when deſcending, it ſuſpends itſelf, and adheres to every thing it can lay hold of.

'This animal,' ſays M. Chauveau, 'never 'ſtretches out his tail, unleſs when his feet are 'ſecure. He employs it with greater dexterity 'in ſeizing and bringing to him ſuch things as 'he cannot otherwiſe reach. He lies down 'and ſleeps as ſoon as day appears, and awakes 'at the approach of night. His vivacity is 'then extremely great. He climbs with great 'facility, and ſearches about continually. He 'tears every thing he finds, either for amuſe-'ment or in queſt of inſects. Were it not for 'this fault, he might be left at liberty. Even 'before his arrival in France, he went about 'freely during the night, and next day he was

'always found lying in the ſame place. He 'may be wakened during the day; but the rays 'of the ſun ſeem to be extremely incommodious 'to him. He is careſſing, without being tract-'able: He diſtinguiſhes his maſter alone, whom 'he follows. He drinks water, coffee, milk, 'wine, and even aquavitæ; which laſt, when 'ſugar is added to it, he drinks till he be in-'toxicated, and continues to be ſick for ſeveral 'days. He eats indiſcriminately bread, meat, 'pot-herbs, roots, and fruits. His common 'food, for a long time, has been bread ſoaked in 'milk, fruits, and pot-herbs. He is paſſionately 'fond of odours, ſugar, and confections.

'He attacks poultry, and always ſeizes them 'under the wing. He ſeems to drink their 'blood; for he never devours them. When 'he has his choice, he prefers a duck to a hen; 'and yet he is afraid of water. He has differ-'ent cries: When alone, during the night, he 'utters ſounds nearly ſimilar to the barking of 'a dog, and he always commences with ſneez-'ing. When he ſports, or receives any in-'jury, he cries like a young pigeon. When he 'threatens, he whiſtles like a gooſe; and, when 'enraged, his cries are loud and confuſed. He 'is never in a paſſion but when hungry. His 'tongue, which he ſometimes thruſts out, is 'immoderately long. The one in my poſſeſ-'ſion was a female; and it is worthy of remark, 'that, during the three years ſhe has been in

'France,

'France, she was only once in season, and was 'then extremely furious.'

The following is M. de Sève's description of a similar animal, exhibited at the fair of St. Germain in the year 1773:

'BY its fur, it has a greater resemblance to 'the otter than to any other animal; but its 'toes are not connected by membranes. The 'tail is as long as the body; but that of the 'otter is only half the length of its body. When 'walking, the length of the body gives it the 'air of a polecat. But the tail and figure of the 'head are different, and the latter has more 'resemblance to that of the otter. The eye is 'larger than that of the polecat. The face has 'some resemblance to that of the small Danish 'dog. His tongue is long, thin, and smooth. 'He appears to be of a mild disposition, and 'licks the hand of any person. Last Lent, 'when I drew its figure, it was very gentle; 'but it has been rendered mischievous by being 'frequently irritated by the populace. At pre-'sent, it sometimes bites after licking the hand. 'It is young, and its teeth seem not to be fully 'formed. It is of a restless disposition, and 'loves to climb. It often sits on end, scratches

'itſelf with its fore-feet like the apes, plays,
'folds its paws into each other, and performs
'many other monkey tricks. Like the ſquir-
'rel, it holds fruits and other food between its
'two paws. We neither give it fleſh nor fiſh.
'When irritated, it endeavours to leap upon the
'perſon, and its cry has a conſiderable reſem-
'blance to that of a large rat. Its fur has no
'odour. With great dexterity it hooks with
'its tail ſuch things as it wants to lay hold of,
'and frequently hangs by the tail upon ſuch
'bodies as it meets with. I have remarked,
'that its toes, which are of a conſiderable length,
'and ſpontaneouſly unite, when it walks or
'climbs; and they ſpread not, like thoſe of
'other animals, in the action of ſupporting itſelf.
'In fine, this animal, according to the account
'given by its maſter, came from the coaſt of
'Africa, where it was called *kinkajou*, and the
'ſpecies is ſaid to be rare. This appellation,
'he ſuppoſed, was derived from the name of the
'iſland or country which it inhabits, being un-
'able to learn any more from the perſon who
'ſold it to him. I ſhall only ſay, that this kin-
'kajou, which is a female, approaches nearer
'to the otter than to any other quadruped. Its
'hair is ſhort and thick, mixed with ſome
'longer hairs. The hairs of the head, like thoſe
'of the body and tail, are of an olive yellowiſh
'colour, mingled with gray and brown; and
'theſe colours vary according to the light in

'which

'which they are viewed. The colour of each 'hair, through its greateſt extent, is a grayiſh 'white, and a duſky greeniſh yellow at the 'point. The fur is mixed with other hairs, 'whoſe extremity is brown, beſide large black 'hairs interſperſed among the reſt, which form 'bands on the ſides of the eyes, and extend to-'ward the front, and another band which va-'niſhes near the neck. The eye is very ſimilar 'to that of the otter, the pupil is ſmall, and 'the iris is of a reddiſh colour. The muzzle is 'blackiſh brown, as well as round the eyes. As 'in ſmall dogs, the end of the noſe is flat, and 'the noſtrils are much arched. The teeth are 'yellow, and thirty-two in number. The ca-'nine teeth are very large, the ſuperior croſſing 'the inferior. There are twelve cutting teeth, 'four canine, and ſixteen grinders. The ears 'are longer than broad, rounded at the points, 'and covered with ſhort hair, of the ſame co-'lour with that on the body. The ſides, throat, 'and inſide of the legs, are of a golden yellow 'colour, which is extremely vivid in ſome 'places. The ſame golden colour prevails on 'ſome parts of the head and hind-legs. The belly 'is grayiſh white, tinged in ſome places with yel-'low. The tail, which is every where covered 'with hair, is thick at the origin, and gradually 'tapers to a point at the extremity. When 'walking, the animal carries its tail horizontal-'ly. The under part of the paws is naked, and

' of a vermilion colour, The claws are white,
' hooked, and guttered below. The length of
' the whole animal is about two feet five in-
' ches.'

The ſimilarity of the names *kinkajou* and *carcajou* led me, as well as other naturaliſts, to imagine, that they belonged to the ſame animal: In the following paſſage from Denis, formerly quoted in part only, where he tells us, that the kinkajou, which I then apprehended to be the carcajou, reſembled the cat, I thought this traveller had been deceived; becauſe all other travellers agree in making the figure of the carcajou ſimilar to that of the glutton:

' The kinkajou,' ſays Denis, ' has ſome re-
' ſemblance to the cat with browniſh red hair.
' Its tail is long, and erected on its back in two
' or three folds. It has claws, and climbs trees,
' where it lies in wait along the branches to dart
' down on its prey. In this manner it ſeizes
' the orignal, inveſts him with its tail, and
' gnaws his neck till he falls. Notwithſtanding
' the ſwiftneſs of the orignal, and the force with
' which he rubs againſt the trees and bruſh-
' wood, the kinkajou never quits its hold; but
' if he can reach the water he is ſaved, becauſe
' the kinkajou is then obliged to ſeparate from
' him. Four years ago, a kinkajou attacked
' one of my heifers, and cut its throat. The
' kinkajous are hunted by the foxes. They
' go in queſt of the kinkajou when he lies in
' wait

'wait for the orignal, and never fail to carry 'him off*.'

Theſe facts correſpond ſo well with the figure and deſcription we have given of this animal, that we may preſume they relate to the ſame animal, and that the carcajou and kinkajou are two diſtinct ſpecies, which have nothing in common, except their darting upon the orignal and other quadrupeds, in order to drink their blood.

We formerly remarked, that the kinkajou was found in the mountains of New Spain: But he is likewiſe found in thoſe of Jamaica, where the natives call him *poto*. Mr. Colinſon ſent me a figure of this poto or kinkajou, which I have inſerted, together with the following notice:

'The body of this animal,' ſays Mr. Colinſon, 'is red, mixed with aſh-colour. The hair 'is ſhort, but very thick, the head rounded, the 'muzzle ſhort, naked, and blackiſh: The eyes 'are brown, the ears ſhort and round, and the 'hairs round the mouth are long; but, as they 'lie flat on the muzzle, they do not form whiſ-'kers. The tongue is narrow and long, and 'the animal often thruſts it three or four inch-'es out of his mouth. The tail is of one uni-'form colour, and gradually tapers to a point: 'It is bended upwards when the animal walks, 'and has the prehenſile faculty. The length

* Deſcript. Geogr. et Hiſtor. des Côtes de l'Amerique Septent. par M. Denis, tom. ii. p. 327.

'of the creature is about fifteen inches, and that 'of the tail ſeventeen.

'This animal was taken in the mountains of 'Jamaica. He is mild, and may be handled 'without danger. He is drowſy during the 'day, and extremely vivacious in the night. 'He differs much from every other quadruped. 'His tongue is not ſo rough as that of the cat, 'or other animals of the *viverra* genus, to 'which he is related by the form of the head and 'claws. Round his mouth are many curled, ſoft 'hairs, from two to three inches long. The ears 'are ſituated nearly oppoſite to the eyes. When 'he ſleeps, he rolls himſelf up into a ball, like 'the hedgehog, with his fore-feet under his 'cheeks. With his tail, he can draw a weight 'equal to that of his body.'

From comparing the two figures, and the deſcriptions of Mr. Colinſon and of M. Simon Chauveau, it is evident, that they both relate to the ſame animal, except ſome ſlight varieties, which change not the ſpecies.

Plate CCXLIII.

A Bell Sculpt

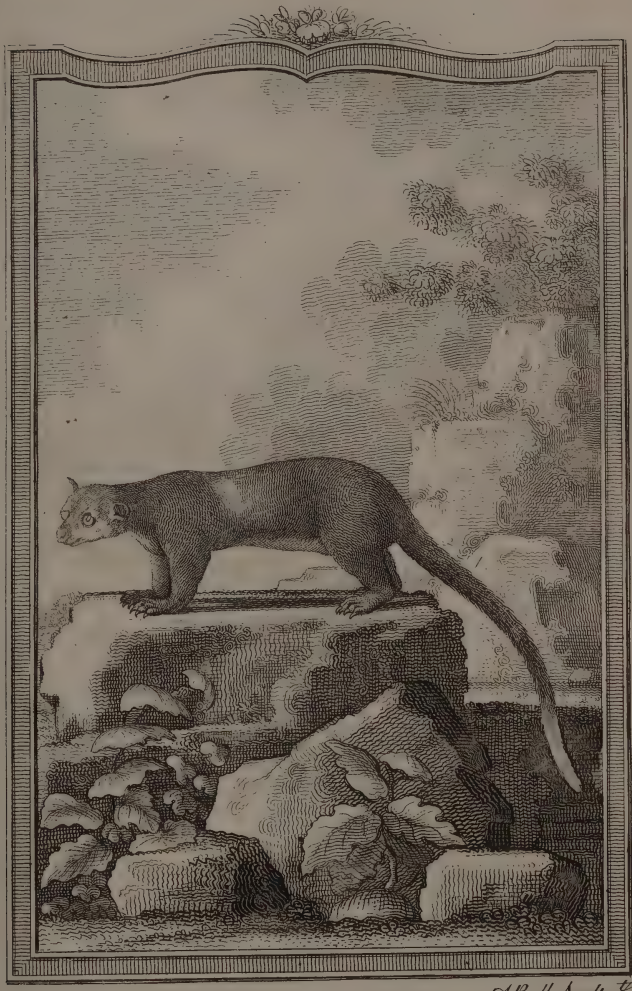
GLUTTON

Plate CCXLIV.

A Bell Sculp.t

CARCAJOU.

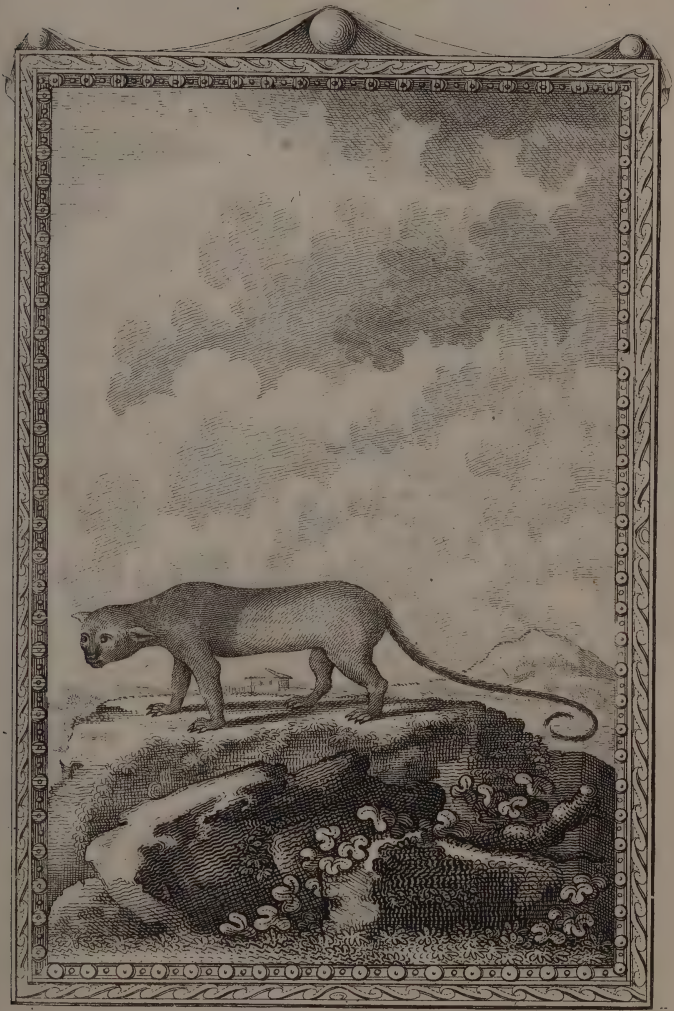
Plate CCXLV.



A Bell Sculp.t

KINCAJOU.

Plate CCXLVI.



A Bell Sculp.

Potot.

The MOUFFETTES, or Stinking POLECATS.

WE have given the generic name *mouffette* to three or four ſpecies of animals, which, when diſturbed, ſend forth an odour ſo ſtrong and offenſive, that it ſuffocates like the ſubterraneous vapour called *mouffette*. Theſe animals are found in all the ſouthern and temperate regions of America*: They have been indiſtinctly mentioned by travellers under the names of *ſtinking beaſts*, *devil's children* †, &c. and not

* 'But, above all, I cannot paſs over without mentioning a little creature, with a buſhy tail, which we called a *buffer*, becauſe when he ſets ſight on you, he ſtands vapouring and patting with his fore-feet upon the ground, and yet hath no manner of defence for himſelf but with his breech; for, upon your approaching near him, he turns about his backſide, and ſquirts at you, accompanied with the moſt abominable ſtink in the world;' *Dampier, vol.* iv. *p.* 96.——In Peru, there are numbers of ſmall foxes, ſome of which ſend forth an intolerable ſmell. During the night, they come into the towns, and, however cloſe the windows, their odour is felt at the diſtance of a hundred paces. Happily their number is not great, otherwiſe they would ſtink the whole world; *Hiſt. des Incas, tom.* ii. *p.* 269.

† There is a kind of martin, called the *devil's child*, or *ſtinking beaſt*, becauſe, when purſued, its urine infects the air for more than a quarter of a mile round. In other reſpects,

not only confounded with each other, but with animals of very different ſpecies. Hernandes * has pretty clearly pointed out three of them. The firſt he calls *yſquiepatl*, a Mexican name, which, were it eaſily pronounced, we would retain. He has given a deſcription and figure of it; and it is the ſame animal of which we have alſo a figure in Seba †. We ſhall call it *coaſe*, from the name *ſquaſh*, which it receives in New Spain ‡. The ſecond Hernandes likewiſe calls

ſpects, it is a beautiful animal. It is of the ſize of a ſmall cat, but thicker. Its hair is luſtrous and graviſh, with two white lines that form, on its back, an oval figure from the neck to the tail, which is buſhy like that of the fox, and erect, like that of the ſquirrel; *Hiſt. de la Nouv. France, par le P. Charlevoix, tom.* iii. *p.* 343. *Note*, This is the animal we ſhall here call the *conepatl*, which is its Mexican name.

* Yſquiepatl ſeu Vulpecula quæ Maizium torrefactum æmulatur colore. *Genus primum*. . . . ſunt et alia duo hujus vulpeculæ genera eadem forma et natura, quorum alterum *yſquiepatl* etiam vocatum, faſciis multis candentibus diſtinguitur; alterum vero *conepatl* ſeu vulpecula puerilis *unica* tantum utrinque ducta, perque caudam ipſam eodem modo delata; *Hernand. Hiſt. Mex. p.* 332. *fig. ibid.*

† Seba, vol. i. p. 68. tab. 42. fig. 1.

‡ The *ſquaſhe* is a quadruped larger than a cat; and its head reſembles that of a fox. He has ſhort ears, and ſharp claws, which enable him to climb trees like a cat. His ſkin is covered with fine, ſhort, yellowiſh hair; and his fleſh is very good and wholeſome; *Dampier, vol.* iii. *p.* 302.

Stifling weaſel, with a ſhort ſlender noſe, ſhort ears and legs, a black body, full of hair, and a long tail, of a black and white colour. The length, from noſe to tail, is about eighteen inches; *Pennant's Synopſ. of Quad. p.* 230.

Yſquiepatl; *Hernand. Mexic. p.* 332 *Raii Synopſ. Quad. p.* 181. *Klein. Quad. p.* 72.

Meles

calls *ysquiepatl*, and which we shall denominate *chinche*, from the name it obtains in South America *. The third Hernandes calls *conepatl*, which name we shall preserve, and is the same animal with that given by Catesby, under the denomination of the *American polecat* †, and by Brisson,

Meles Surinamensis; *Brisson, Quad. p.* 185.

Ichneumon de Ysquiepatl; *Seba, Mus. tom.* i. *tab.* 42.

* The skunk weasel, with short rounded ears, black cheeks, and a white stripe from the nose, between the ears, to the back. The upper part of the neck and the whole back are white, divided at the bottom by a black line, commencing at the tail, and passing a little way up the back. The belly and legs are white. The tail is very full of long coarse hair, generally black, and sometimes tipped with white; that figured by M. de Buffon is entirely white. It has very long nails on all the feet, like those on the fore-feet of a badger. It is somewhat less than the European polecat; *Pennant's Synopf. of Quad. p.* 232.

Chinche; *Seuillée, Obf. Peru, p.* 271.

Skunk, fiskatta; *Kalm's Voy. Forster's Trav. vol.* i. *p.* 273. *tab.* 2. *Josselyn's Voy. p.* 85.

Enfant du diable, Bête puante; *Charlevoix, Nouv. Franc. tom.* v. *p.* 196.

† This animal in shape is not unlike our common polecat, except that the nose of this is somewhat longer: The colour of all I have seen is black and white, though not always alike marked. This had a list of white, extending from the hind part of the head along the ridge of the back, to the rump; with four others, two on each side, running parallel with it; *Catesby's Nat. Hist. of Carolina, vol.* ii. *p.* 62.

The straited weasel, with rounded ears; head, neck, belly, legs, and tail, black; the back and sides marked with five parallel white lines, one on the top of the back, the others on each side. The second line extends some way up the tail, which is long and bushy towards the end. It is of the size of an European polecat; only the back is more arched. The disposition

Briſſon, under that of the *ſtriped polecat* *. We are acquainted with a fourth ſpecies, which we call *zorilla*, the name it receives in Peru and other parts of South America.

We are indebted for our knowledge of two of theſe animals to M. Aubry, whoſe taſte and ſkill in natural hiſtory are conſpicuous in his cabinet, which is one of the moſt curious in Paris. He obligingly communicated to us all his treaſures, as often as we required them; and this will not be the only opportunity we ſhall have of expreſſing our gratitude. The animals we borrowed from M. Aubry, in order to have them drawn and engraved, are the coaſe, the chinche, and the zorilla; the two laſt of which may be regarded as new; becauſe there is no figure of them to be found in any author.

poſition of the ſtripes varies; *Pennant's Synopſ. of Quad. p.* 232.

Polecat or ſkunk; *Lawſon's Carolina*; *Cateſby's Carolina.*

Muſtella Americana fœtida; *Klein, Quad. p.* 64.

Viverra putorius, fuſca, lineis quatuor dorſalibus, parallelis, albis; *Linn. Syſt. Nat. p.* 64.

* The zorilla weaſel has the back and ſides marked with ſtripes of black and white; the laſt tinged with yellow. The tail is long and buſhy, part white and part black. The legs and belly are black. It is ſmaller than the ſkunk; *Pennant's Synopſ. of Quad. p.* 233.

Muſtela nigra, tæniis in dorſo albis, putorius ſtriatus. Le Putois rayé; *Briſſon, p.* 181.

Annas of the Indians; *Zorrinas* of the Spaniards: *Garcil. de la Vega, p.* 331.

Mariputa, Maſutiliqui; *Gumilla, Oronoque, tom.* iii. *p.* 240.

The

The firſt of theſe animals was tranſmitted to M. Aubry, under the name of *pekan*, *devil's child*, or *wild cat of Virginia*. I perceived that it was not the pekan, rejected all the compound denominations, and diſcovered that it was the *yſquiepatl* of Hernandes, and the *ſquaſh* of other travellers *; from which laſt appellation I derived the name *coaſe*. It is about ſixteen inches long, including the head and body. The legs are ſhort, the muzzle thin, and the ears ſmall. The hair is of a deep brown colour, and the claws are black and ſharp. It lives in the holes and cliffs of rocks, where the female brings forth her young. It feeds upon beetles, worms, and ſmall birds; and, when it gets admiſſion to the court-yards, it deſtroys the poultry, of which it only eats the brain. When afraid or irritated, it emits an odour ſo abominable, that neither men nor dogs dare approach. Its urine, which apparently mingles with this peſtiferous odour, ſtains and infects in an indelible manner. It appears, however, that this diſagreeable odour is not conſtant: 'This animal,' Seba remarks, 'was ſent me alive from Surinam; and I kept 'it during a whole ſummer in my garden, 'where it was ſecured by a ſmall chain. It ne-

* *Yſquiepatl*, whoſe colour reſembles that of burnt maize.—— Its head is like that of a young fox; and its ſnout is nearly like that of a hog. The Americans call it *quasje*; *Seba*, *vol.* i. *p.* 68. *Note*, This authority is a farther proof that *ſquaſh*, or *coaſe*, is the true name of the animal.

'ver

'ver bit any perſon; and when it was preſented
'with food, it allowed itſelf to be handled like
'a ſmall dog. It dug the earth with its ſnout
'and fore-feet, which were armed with long
'crooked claws. During the day, it concealed
'itſelf in a kind of den which it had made. It
'came out in the night, and, after trimming it-
'ſelf, began to run about, from right to left, as
'far as its chain would permit; and this exerciſe
'it continued till morning. It ſearched every
'where with its noſe on the ground. It was
'ſerved with victuals every night, and never
'took any food but what was agreeable to its
'nature. It was not fond of fleſh, bread, and
'ſeveral other kinds of nouriſhment. Maybugs,
'boiled ſhrimps, caterpillars, and ſpiders, were
'its chief delicacies. About the end of autumn,
'it was found dead in its hole, being unable to
'endure the cold. The hair on the back is of a
'deep cheſnut colour; the ears are ſhort; the
'forehead is round, and of a brighter colour
'than the back; and the belly is yellow. The
'tail is of a moderate length, covered with ſhort
'brown hair, and a kind of yellowiſh rings were
'perceptible all round it.'

Though Seba's deſcription and figure correſpond very well with thoſe of Hernandes, it may be doubted whether they relate to the ſame animal; becauſe Seba makes no mention of the deteſtable odour, which he muſt unqueſtionably have perceived in the courſe of a whole ſummer,

during

during which he kept the animal in his garden. But no ſuch doubt will remain, after we are informed, that this animal does not ſend forth its diſagreeable odour, unleſs when irritated or frighted; and that it is often tamed and kept in houſes by the inhabitants of different parts of America *.

Of theſe four ſpecies of *mouffettes*, to which we have given the name of *coaſe*, *conepatl*, *chinche*, and *zorilla*, the two laſt belong to the warmeſt climates of South America, and may be varieties only, and not diſtinct ſpecies. The two firſt inhabit the more temperate climates of New Spain, Louiſiana, the Illionois, Carolina, &c. and appear to be different ſpecies, particularly the coaſe, which has only four toes on the forefeet, while all the others have five. But all theſe animals have the ſame figure, the ſame inſtincts, the ſame peſtiferous odour, and may be

* Notwithſtanding the offenſive quality of theſe animals, they are ſometimes tamed by the Engliſh, French, Swedes, and Savages of North America. They are ſaid to follow their maſters like domeſtic animals, and that they do not throw out their urine, unleſs when beat or irritated. When a Savage kills any of them, he cuts out the bladder, to prevent their fleſh, which is good eating, from being infected with the ſmell of the urine. I often met with Engliſh and French, who informed me, that they had eaten this fleſh, and found it to be very well taſted, approaching nearly to the flavour of a pig. The Europeans put no value on the ſkin, on account of the length and coarſeneſs of the hair; but the ſavages make purſes of it, &c.; *Kalm's Travels*, *p.* 417.

ſaid to differ only in the length and colour of their hair. The coaſe is of a pretty uniform brown colour. The conepatl *, upon a black ground-colour, has five white bands which ex-

* The Engliſh denominate *polecat* a ſpecies of animal which is common not only in Penſylvania, but in ſeveral other more northern and ſouthern provinces of America. In New-York its vulgar name is *ſkunck*; and the Swedes in that country call it *ſiſkatte*. . . This animal has a great reſemblance to the martin, and is generally of a black colour, with three white bands which run longitudinally from head to tail. Some of them have been ſeen, though rarely, almoſt entirely white. . . . . This animal brings forth its young in burrows, or in hollow trees: It continues not always on the ground, but mounts upon trees. It is an enemy to birds; for it breaks their eggs and eats their young. When it gets admiſſion to a hen-houſe, it makes great havock. . . . . When hunted, either by men or dogs, he runs as well as he can, or climbs up a tree; and, when hard puſhed, he darts forth his urine againſt his purſuers. . . . The odour of his urine is ſo ſtrong, that it ſuffocates. If a drop of this peſtiferous fluid falls upon the eyes, the perſon is in danger of loſing his ſight; and, when it falls upon a man's clothes, it is extremely difficult to extract the ſmell. Moſt dogs fly from him the moment they feel this odour. It requires more than a month to remove the ſmell from ſtuffs of any kind. . . . In the woods, it is often felt at a great diſtance. In the year 1749, one of theſe animals came near the place where I lodged. It was in winter and during the night. The dogs were wakened, and purſued it. In a moment, it diffuſed an odour ſo fetid, that I was almoſt ſuffocated in my bed, and the cows bellowed in a hideous manner. . . . About the end of the ſame year, another of them ſlipt into our cave; but it diffuſed not the ſmalleſt odour, which it never does, unleſs when purſued or irritated. A woman perceived its eyes ſparkle in the dark, and killed it. The cave was inſtantly filled with ſuch a noxious odour, that the woman was not only ſick for ſeveral days, but the bread, meat, and other proviſions were ſo infected, that they were obliged to be thrown away; *Kalm's Travels*, *p.* 412.

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tend longitudinally from the head to the tail. The chinche * is white on the back, and black on the flanks, with a head entirely black, excep a white line which extends from the nap of the neck to the chanfrin of the noſe. Its tail is buſhy, and covered with very long white hair,

* This animal was called *chinche* by the natives of Braſil. It is of the ſize of a cat. Its head is long, and tapers toward the end of the upper jaw, which advances beyond the under, and both form a mouth that extends to the external angles of the eyes, which are long and narrow: The uvea is black, and all the reſt white. The ears are large, and nearly reſemble thoſe of a man, and their whole ſtructure indicates a delicate ſenſe of hearing. Two white bands ariſe on the head, paſs over the ears, and, receding from each other, terminate in an arch upon the ſides of the belly. Its legs are ſhort, and the paws are divided into five toes, armed with black claws, with which it digs holes in the earth. Its back is arched like that of a hog, and its belly is flat. The tail is of equal length with the body, and differs not from that of the fox. The hair is of a dark gray colour, and as long as that of a cat. It burrows in the earth like a rabbit; but its hole is not ſo deep. I have had much difficulty in extracting the bad ſmell of this animal from my clothes which had been infected by it. Though ſeveral times waſhed, ſoaked, and dried in the ſun, it continued more than eight days. I was informed that this ſmell proceeds from the animal's urine, which it diſcharges on its tail, and by this means diſperſes it all around, in order to put the enemy to flight by the intolerable ſtench; that, for the ſame purpoſe, it urines in the entry to its habitation; that it is very fond of ſmall birds and poultry; and that it is the chief cauſe of the deſtruction of birds in the country of Buenos-aires; *Journal du P. Feuillée, p.* 272.—*Note*, The chinche appears to be the ſame animal with the *chincille* mentioned by Acoſta. 'The chincilles,' he remarks, 'are 'ſmall animals like ſquirrels, and their hair is wonderfully ſoft and 'ſmooth. . . . They are found in the Sierre of Peru; *Hiſt. Nat. des Indes Occident. p.* 199.

mixed with a little black. The zorilla *, which is called *mapurita* †, ſeems to be a ſmaller ſpecies. Its tail, however, is as buſhy and as beautiful as that of the chinche, from which it differs in the diſpoſition of the ſpots in the fur. The ground-colour of the zorilla is black, upon which there are longitudinal white bands, extending from the head to the middle of the back, and other tranſverſe white bands on the flanks, the crupper, and the origin of the tail, which is black, as far as the middle, and then white to the extremity; but the tail of the chinche is of one uniform colour. All theſe animals ‡ are nearly of

* The zorilla of New Spain is as large as a cat, with black and white hair, and a very fine tail. When purſued, it diſcharges its urine as a defence; for the ſtench of this excretion is ſo ſtrong, that it poiſons the air all round to the diſtance of a hundred paces, and prevents the enemy from advancing. If it falls upon clothes, they muſt be buried for ſome time under the ground, in order to remove the ſtench; *Voyage de Gemelli Careri, tom.* vi. *p.* 212.

† The mapurita is an animal on the banks of the Oronooko, and is perhaps the moſt beautiful, and, at the ſame time, the moſt deteſtable of all creatures. The Whites of America call it *mapurita*, and the Indians *meſtitliqui*. Its body is all ſpotted with black and white, and its tail is adorned with beautiful hair. It is an active, miſchievous, and ſtrong animal. . . . The ſtench of its odour, which extends to a great diſtance, is ſo intolerable, that I was once almoſt ſuffocated by it. . . . The Indians, however, eat its fleſh, and adorn themſelves with its ſkin, which has no bad ſmell; *Hiſt. Nat. de l'Orenoque, par Gumilla, tom.* iii. *p.* 240.

‡ In Louiſiana, there is a ſmall animal of conſiderable beauty, but whoſe urine poiſons the air to the diſtance of more than a league; for this reaſon, it is called the *ſtinking beaſt*.

of the ſame figure, and of the ſize of an European polecat, which they reſemble ſtill more in their manners. The phyſical reſults of their organization are likewiſe the ſame. Of all the animals on this continent, the polecat diffuſes the moſt diſagreeable odour. This odour is only more exalted in the mouffettes, whoſe ſpecies or varieties are numerous in America. But, in the

beaſt. It is as large as a cat. The male is of a fine black colour; the female is likewiſe black, and ſpotted with white. Its eyes are extremely vivacious. . . . It is juſtly denominated *ſtinking*; for its odour is infectious. . . . I once killed one of theſe animals, and my dog having darted upon it, returned and fawned upon me. A drop of the blood, and doubtleſs alſo the urine, was left upon my coat, which was made of hunting ticking. The ſmell was ſo intolerable, that I was obliged to run home to change my clothes, &c. *Hiſt. de la Louiſiane, par le Page du Pratz, tom.* ii. *p.* 86.———When one of theſe animals is attacked by a dog, to appear formidable, it ſo changes its uſual form, by briſtling up its hairs, and contracting its length into a round form, that it makes a very terrible appearance. This menacing behaviour, however inſufficient to deter its enemy, is ſeconded by a repulſe far more prevailing; for, from ſome ſecret duct, it emits ſuch fetid effluvia, that the atmoſphere, for a large ſpace round, ſhall be ſo infected with them, that men and other animals are impatient till they are quit of it. This ſtench is unſupportable to ſome dogs, and neceſſitates them to let their game eſcape; others, by thruſting their noſes into the earth, renew their attacks till they have killed it, but rarely care to have more to do with ſuch noiſome game, which, for four or five hours, diſtracts them. The Indians, notwithſtanding, eſteem their fleſh a dainty, of which I have eat, and found it well taſted. I have known them brought up young, made domeſtic, and prove tame and very active, without exerciſing that faculty, which fear and ſelf-preſervation, perhaps, only prompt them to. They hide themſelves in hollow trees and rocks, and are found in moſt of the northern continents of America. Their food is inſects and wild fruit; *Cateſby's Carolina, vol.* ii. *p.* 62.

Old Continent, the ſpecies of the polecat is ſingle; for I believe not that the animal mentioned by Kolbe, under the name of the *ſtinking badger* *, which appears to be a real mouffette, exiſts at the Cape of Good Hope as a native of that country. It may have been tranſported from America; and Kolbe, who is by no means exact in his facts, may have borrowed his deſcription from P. Zuchel, whom he quotes as having ſeen this animal in Braſil. That of New Spain, called *Ortohua* by Fernandez †, ſeems to be the ſame animal with the zorilla of Peru; and the *tepemaxtla* of the ſame author may be the conepate, which ought to be found in New Spain, as well as in Louiſiana and Carolina.

* Deſcript. du Cap de Bonne-Eſperance, par Kolbe, tom. iii. p. 86.

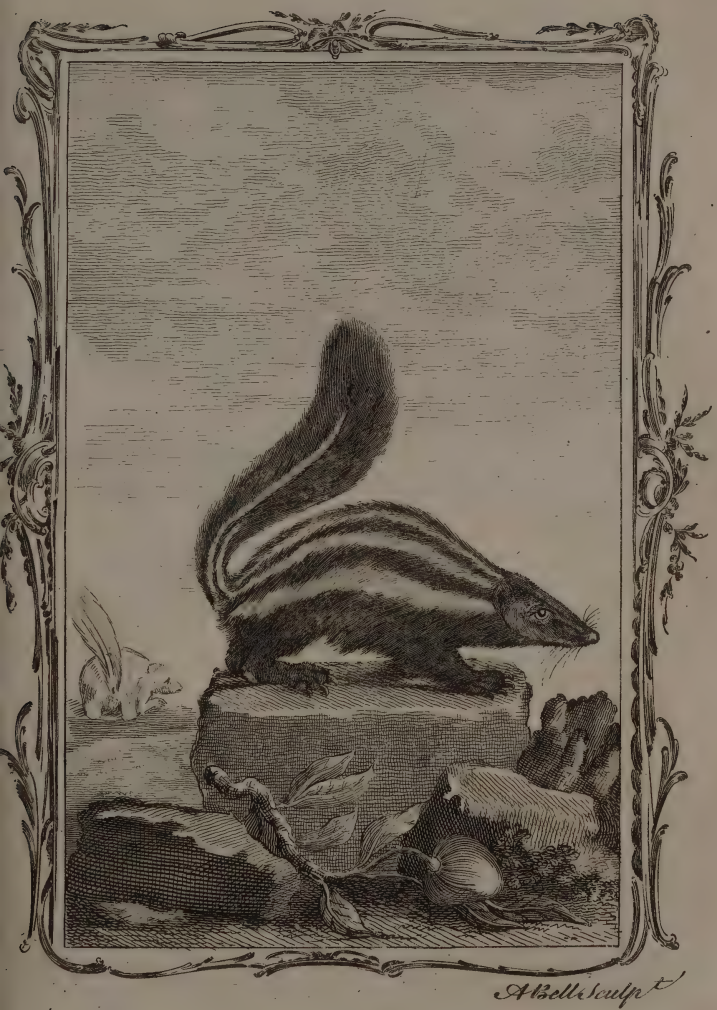
† *Ortohula*, magnitudine tres dodrantes vix ſuperat, nigro candidoque veſtita pilo, ſed quibuſdam in partibus fulvo . . . . apud has gentes in cibi jamdiu venit uſum, quamvis crepitus ventris ſit illi fœtidiſſimus: Occitucenſibus verſatur agris . . . eſt et altera ſpecies quam tepemaxtlam vocant, eadem fere forma et natura, ſed nulla in parte fulva, et cauda nigris albiſque faſciis tranſverſim diſcurrentibus varia, quæ provenit quoque apud Occitucenſes; *Fernand. Hiſt. An. Nov. Hiſp. cap.* xvi. *p.* 6.

COASSE.

Plate CCXLVIII.

CHINCH.

Plate CCXLIX.



CONEPATE.

ZORILLE.

The PEKAN* and the VISON.

THE name *pekan* was long familiar in the fur-trade of Canada †, without knowing the animal to which it properly belonged. This name is not to be found in the writings of the naturaliſts, and travellers have employed it indiſcriminately to denote different animals ‡, and particularly the mouffettes. By others, the animal which ought to bear the name of pekan has been called a *fox* or a *wild cat*; and it was impoſſible to derive any preciſe knowledge from ſuch ſhort and erroneous intimations. With regard to the *viſon*, we are equally ignorant. We know nothing of theſe names, except that they belong to two North American animals. We

* Pekan weaſel, with very long and ſtrong whiſkers; ears a little pointed; hair on the head, body, belly, and legs, cinereous at the roots, and of a bright bay at the ends, very ſoft and gloſſy. Between the fore-legs, there is a white ſpot. The toes are covered with thick hair above and below. The claws are ſharp. The tail is of a deeper colour than the body. In form, it is like a martin, but much leſs; *Pennant's Synopſ. of Quad. p.* 224.

† Names of the ſkins brought from Canada, and their values in the year 1683.——Thoſe of the pekans, wild cats, or devil's children, are worth one livre fifteen ſous a piece; *Voyage de la Hontan, tom.* ii. *p.* 39.

‡ It diffuſes an inſupportable odour. In Canada, the French call it *devil's child* or *ſtinking beaſt*: Some of them, however, give it the name of *pekan*; *Kalm's Trav. p.* 412.

found these two animals in the cabinet of M. Aubry, who obligingly permitted us to describe and draw them.

The pekan has so strong a resemblance to the pine weasel, and the vison * to the martin, that they may be regarded as varieties of these species. They not only have the same figure, the same proportions, the same length of tail, the same quality of hair, but the same number of teeth and claws, and the same instinct and manners. Hence we may conclude, that the pekan is a variety of the pine weasel, and the vison a variety of the martin, or, at least, that the species are so allied, that they exhibit no real differences. The hair of the pekan and vison is only browner, and more lustrous and silky than that of the pine weasel and the martin. But this difference, it is well known, is common to them with the beaver, the otter, and other animals of North America, whose furs are more beautiful than those of the same animals in the North of Europe.

* I am inclined to think, that the animal mentioned by Sagard Theodat, under the name of *ottay*, is the same with the vison: 'The ottay,' he remarks, 'is as large as a small rabbit. Its hair 'is very black, and so soft, polished, and fine, that it resembles 'velvet.' The Canadians are fond of these skins, and make garments of them; *Voyage au Pays des Hurons, p.* 308. No Canadian animal corresponds so well with this description as the vison.

Plate CCLI.

PECAN.

VISON.

THE SABLE*.

THE ſable is mentioned by almoſt every naturaliſt, without knowing more of it than the ſkin. M. Gmelin is the firſt who gave a figure and deſcription of this animal. He ſaw two of them alive in the houſe of the governour of Tobolſki. 'The ſable,' ſays he, 'reſembles the martin in the form and habit of 'body, and the weaſel in the teeth. It has ſix

* Sable weaſel, with long whiſkers, rounded ears, and long buſhy tail. The colour of the hair is black at the tips, and cinereous at the bottom; the chin is cinereous, and the edges of the ears yellowiſh. Sometimes the hair is of a tawny caſt; for, in ſpring, after ſhedding the coat, the colour varies. There are inſtances of their being found of a ſnowy whiteneſs. The uſual length, from noſe to tail, is about eighteen inches, and that of the tail ten; *Pennant's Synopſ. of Quad. p.* 217.

Zobel, in German; *Sobol,* in Poliſh; *Sabbel,* in Swediſh; *Zibeline, Marte Zibeline,* in French.

Zobela; *Agricol. An. ſubter. p.* 485.

Muſtela Sobella; *Geſner, Quad. p.* 768.

Muſtela Zibellina, the ſable; *Raii Syn. Quad. p.* 201. *Klein. Quad. p.* 64.

Moſtela Zibellina, *Ariſtotelis* Satherius, Nipho, Cebalus, *Alciato.* Mus Sarmaticus et Scythicus; *Charleton Exercit. p.* 20.

Muſtela Zibellina, pedibus fiſſis, corpore obſcure fulvo, fronte exalbida, gutture cinereo; *Linn. Syſt. Nat. p.* 68.

Muſtela Zibellina; *Nov. Com. Petrop. tom.* v. *p.* 330. *tab.* 6.

Martes Zibellina; Muſtela obſcure fulva, gutture cinereo; *Briſſon. Quad. p.* 180. *Animalium quorundam Quadrup. Deſcript. Auctore Georg. Gmelin.*

'cutting teeth pretty long, and a little crooked, 'and two canine in the under jaw, and ſmall 'ſharp teeth in the upper. It has long whiſ-'kers round the mouth, and large feet, all 'armed with five claws. Theſe characters were 'common to both the ſables. But the one was 'of a blackiſh brown colour all over the body, 'except the ears, and below the chin, where 'the hair was a little yellow. The other was 'ſmaller, and of a yellowiſh brown colour, 'with the ears and under part of the chin of a 'paler caſt. Theſe are their winter colours; 'for, in ſpring, they change by the ſhedding of 'the hair. The firſt ſable, which was of a 'blackiſh brown, changes into a browniſh yel-'low in ſpring; and the ſecond, which was of 'a yellowiſh brown, becomes a pale yellow. I 'admired,' continues M. Gmelin, 'the agility 'of theſe animals. Whenever they perceive a 'cat, they riſe upon their hind-feet, to prepare 'for the combat. In the night, they are ex-'tremely reſtleſs and active *. During the day, 'on the contrary, and particularly after eating, 'they generally ſleep half an hour or an hour, 'when they may be puſhed, ſhaken, and even 'pricked, without awaking.' From this de-ſcription we learn, that the ſables are not all of

* This reſtleſs activity during the night is not peculiar to the ſable. The ſame thing I remarked in two ermines, which I kept for ſeveral months.

the

the ſame colour; and, conſequently, that the nomenclators, who deſcribe them by the ſpots and colours of the hair, have employed a fallacious character; for their colour not only varies in different ſeaſons, but the individuals of the ſame and of different climates differ from each other.

The ſables inhabit the banks of rivers, and the thickeſt parts of the woods. They leap with great agility from tree to tree, and avoid the rays of the ſun, which are ſaid, in a ſhort time, to change the colour of their hair. It is pretended, that they conceal themſelves, and lie in a torpid ſtate during the winter *; and yet this is the beſt ſeaſon for hunting them, becauſe their fur is then better and more beautiful than in ſummer. They live upon rats, fiſhes, pine tops, and wild fruits. They are very ardent in their amours: During their ſeaſon of love, they emit a ſtrong odour, and their excrements, at all times, have a diſagreeable ſmell. They are chiefly found in Siberia: There are not

* Of the two ſables mentioned by M. Gmelin, the firſt came from the province of Tomſkien, and the ſecond from that of Bereſowien. We likewiſe learn, from his account of Siberia, that there are on the mountains of Sopka Sinaia, black ſables with ſhort hair, the hunting of which is prohibited; and that a ſimilar kind is alſo found in the more advanced mountains, as well as among the Calmucks Vrangai. 'I ſaw,' ſays he, 'ſome of their 'ſkins which the Calmucks had brought down: They are diſtin-'guiſhed by the name of *Kangaraga ſables*;' *Voyage de Gmelin, tom* i. *p.* 217.

many

many of them in the foreſts of Great Ruſſia, and ſtill fewer in Lapland. The blackeſt ſables are moſt eſteemed *. The ſable differs from all other furs in this circumſtance, that the hair turns with equal eaſe to any ſide.

The hunting of the ſables is carried on by criminals confined to Siberia, or by ſoldiers ſent for the purpoſe, who generally remain there ſeveral years. Both are obliged to furniſh a certain quantity of furs. They ſhoot with a ſingle ball, to injure the ſkin as little as poſſible; and ſometimes, inſtead of fire-arms, they uſe croſs-bows and ſmall arrows. As the ſucceſs of this hunting requires much addreſs and aſſiduity, the officers are allowed to encourage the ſoldiers, by giving them a proportional part of all the ſables they kill above what they are obliged to furniſh weekly, which turns out to be a conſiderable premium †.

* The ſable differs from the martin by being ſmaller, and having finer and longer hair. The true ſables are damaſked with black, and are taken in Tartary. There are few of them in Lapland. The fur is eſteemed in proportion to the blackneſs of the hair, and ſometimes ſells at ſixty crowns, though the width of the ſkin exceeds not four inches. Some of them have been ſeen white, and others gray; *Regnard, tom.* i. *p.* 176. Schoeffer likewiſe remarks, that white ſables are ſometimes found; *Hiſt. de la Lapponie, p.* 318.

† A colonel, from ſeven years ſervice in hunting ſables, may draw, of clear profit, four thouſand crowns, the ſubalterns in proportion, and each ſoldier ſix or ſeven hundred; *Voyage du P. Avril, p.* 169. See alſo *Relat. de la Muſcovie, par la Neuville, p.* 217.

Some

Some naturaliſts have ſuſpected that the ſable is the *ſatherius* of Ariſtotle; and I believe their conjecture is well founded. The fineneſs of the fur is a proof that the animals are often in water; and travellers inform us *, that they are never very numerous, but in ſmall iſlands, where the hunters go in queſt of them. Beſides, Ariſtotle mentions the ſatherius as a water animal, and ranks it with the otter and beaver. It is likewiſe to be preſumed, that, when Athens was in its ſplendor, theſe beautiful furs were known in Greece, and that the animal which furniſhed them had a name. Now, there is no name which can more properly be applied to the ſable, than that of *ſatherius*, eſpecially if it be true that the ſable eats fiſh †, and continues ſo much in the water as to be reckoned amphibious.

SUPPLEMENT.

TO the article ſable we have nothing to add but ſome facts, related by the Ruſſian travellers, which are publiſhed in the laſt volumes of the *Hiſt. Gen. des Voyages.*

* The hunters go to the ſmall iſlands in queſt of ſables, where they retire. They are killed with a kind of croſs-bows, &c.; *Voyage du P. Avril, p.* 168.

† In umbroſis ſaltibus verſatur ſemper, inſidiatur aviculis.—In eſcam aſſumit mures, piſces, uvas rubeas; *Rzaczinſki, Auct. Hiſt. Nat. Polon. p.* 318.

'The ſables live in holes of corrupted trees, 'or under their roots, or on rocky eminences. 'Their neſts are conſtructed with moſs, branch-'es of trees, and turf. In theſe holes, or neſts, 'they continue twelve hours, both in ſummer 'and winter. The remainder of their time 'is occupied in queſt of ſubſiſtence. In ſpring, 'they feed upon weaſels, ermines, ſquirrels, 'and eſpecially hares. But, in the fruit ſea-'ſon, they eat bay-berries, and the fruit of the 'ſervice-tree. In winter, they catch ſmall birds 'and woodcocks. When the ſnow falls, they 'retire to their holes, where they remain ſome-'times three weeks. They copulate in the 'month of January. Their amours continue 'one month, and often produce bloody combats 'between the males. After copulation, they 'remain in their neſts about 15 days. The fe-'males bring forth about the end of March, 'and produce from three to five young, whom 'they ſuckle four or ſix months.

'The hunters go in companies of forty, in 'queſt of theſe animals during the winter only, 'and uſe canoes, with proviſions for three or 'four months. They have a chief, who, when 'they arrive at the rendezvous, aſſigns to each 'band a particular quarter, and all the hunters 'are obliged to obey him. The ſnow is re-'moved from the places where the ſnares are 'to be laid; and each hunter prepares twenty 'of them daily. The hunters chooſe a ſmall 'ſpot in the vicinity of trees, ſurround it, to a

'certain

'certain height, with ſharp ſtakes, and cover 'it with thin planks, to prevent the entrance of 'the ſnow. They leave a narrow paſſage, above 'which is placed a beam, ſupported only by a 'ſmall twig; and, as ſoon as the ſable touches 'it to carry off the piece of fleſh or fiſh, put 'there for a bait, the beam falls and kills the 'animal. All the ſables are brought to the 'general conducter; or, rather, they are con-'cealed in the holes of trees, to prevent the 'Tonguſians, or other ſavage people, from 'ſtealing them. When the ſables are averſe 'to enter theſe ſnares, the hunters have re-'courſe to nets. When a hunter diſcovers the 'tract of a ſable, he follows it till he diſcovers 'its hole, and, by means of ſmoke, obliges the 'animal to come out. He then extends his 'net; and continues lying in wait, in this man-'ner, with his dogs, for two or three days 'ſucceſſively. This net is thirteen fathoms long, 'and four or five in height. When the ſable 'leaves its hole, it ſeldom eſcapes; for the dogs 'ſlay it when entangled by the net. When 'diſcovered on the trees, the hunter ſhoots 'them with blunt arrows, to prevent the ſkins 'from being injured. The hunting being 'finiſhed, the company aſſemble at the general 'rendezvous, and reimbark as ſoon as the rivers 'become navigable by the melting of the ice *.'

* Hiſt. Gen. des Voyages, tom. xix. p. 144.

The LEMING, or LAPLAND MARMOT*.

OLAUS MAGNUS is the firſt who mentions the leming. All that Geſner, Scaliger, Ziegler, Johnſton, &c. have ſaid concerning it, is borrowed from this author. But Wormius, after the moſt accurate reſearches,

* Lapland marmot, with two very long cutting teeth in each jaw; head pointed; long whiſkers; ſix of the hairs on each ſide longer and ſtronger than the reſt; eyes ſmall and black; mouth ſmall; upper lip divided; ears ſmall, blunt, and reclining backwards; fore-legs very ſhort; four ſlender toes on the fore-feet, covered with hairs; and, in the place of the thumb, a ſharp claw, like a cock's ſpur; five toes behind; tail about half an inch long, the body and head about five. The ſkin is very thin. The colour of the head and body is black and tawny, diſpoſed in irregular blotches. The belly is white, tinged with yellow; *Pennant's Synopſ. of Quad. p.* 274.

Leming is the Norwegian name of this animal, which we have adopted.

Lemmar vel lemmus; *Olai Magni, de Gent. Septent. p.* 358.

Leem vel lemmer; *Geſner, Quad. p.* 371.

Mus Norwegicus, vulgo leming; *Worm. Muſ. p.* 321. 325. *Schoeffer. Lapland, p.* 136. *Pontop. Norway, Stram. Sandmor, p.* 154. *Raii Syn. Quad. p.* 227.

Sable mice; *Phil. Tranſ. Abridg. vol.* ii. *p.* 875.

Cuniculus caudatus, auritus, ex flavo, rufo, et nigro variegatus; *Briſſon. Quad. p.* 100.

Mus lemmus, cauda abbreviata, pedibus pentadactylis, corpore fulvo nigro vario; *Linn. Syſt. Nat. p.* 80.

Fial-mus, ſabell-mus, *Lappis* Lummick; *Faun. Suec. No.* 29.

has

has written a hiſtory of this animal, which he deſcribes in the following manner: 'It has,' he remarks, 'the figure of a mouſe; but the tail 'is ſhorter, and the body about five inches long. 'The hair is fine, and ſpotted with various co- 'lours. The fore part of the head is black, 'and the hind part yellowiſh. The neck and 'ſhoulders are black. The reſt of the body is 'reddiſh, and marked with ſmall black ſpots of 'different figures, as far as the tail, which ex- 'ceeds not half an inch in length, and is cover- 'ed with blackiſh yellow hairs. Neither the 'figure, nor the order of the ſpots, are the ſame 'in every individual. Round the mouth there 'are ſeveral ſtiff hairs in the form of whiſkers, 'of which ſix on each ſide are longer and ſtiffer 'than the reſt. The opening of the mouth is 'ſmall, and the upper lip is divided, as in the 'ſquirrels. From the upper jaw proceed two 'long, ſharp, and ſomewhat crooked cutting 'teeth, the roots of which penetrate as far as 'the orbits of the eyes. Two ſimilar teeth in 'the under jaw correſpond with thoſe above; 'and there are three grinders on each ſide, ſitu- 'ated at a diſtance from the cutting teeth. The 'firſt of the grinders is large, and compoſed of 'four lobes, the ſecond of three lobes, and the 'third is much ſmaller. Each of theſe three 'teeth has a ſeparate ſocket, and they are placed 'in the palate, at a conſiderable diſtance from one 'another. The tongue is pretty large, and ex-

'tends

'tends to the extremity of the cutting teeth. 'From the remains of herbs and ſtraw found 'in its throat, we are inclined to think that it 'is a ruminating animal. The eyes are ſmall 'and black, and the ears recline on the back. 'The fore-legs are very ſhort, and the feet co-'vered with hair, and armed with five ſharp 'crooked claws; the middle one is very long, 'and the fifth is like a ſmall thumb, or a cock's 'ſpur, and ſometimes ſituated equally high on 'the leg. The whole belly is whitiſh, inclined 'to yellow,' &c.

Theſe animals, though their body is thick, and their legs very ſhort, fail not to run pretty quickly. They generally inhabit the mountains of Norway and Lapland; but, in particular years, they ſometimes deſcend in ſuch numbers *, that

* It has been remarked, that the lemmers appear not regularly every year, but at certain unforeſeen periods, and in ſuch numbers, that they ſpread every where, and cover the whole ſurface of the earth. . . . Theſe ſmall animals, inſtead of being afraid, or flying from paſſengers, are bold and obſtinate, face thoſe who attack them, and cry and yelp nearly in the ſame manner as ſmall dogs. When attacked, they neither fear clubs nor halberds, but dart againſt thoſe who ſtrike them, outrageouſly biting, and fixing upon the weapons employed to kill them. Theſe animals, it is ſingular, never enter the houſes or huts to do miſchief; but keep always concealed among the buſhes and hillocks. They ſometimes make war, and divide themſelves into two armies along the lakes and meadows. . . . . Their enemies are foxes and ermines, who devour great numbers of them. . . . . Graſs that has been eat down, and ſprings again, is ſaid to kill them; and they

that the arrival of the lemings is conſidered as a terrible ſcourge, the effects of which it is impoſſible to avoid. They make dreadful devaſtation in the fields, lay waſte the gardens, ruin the crops, and leave nothing except what is ſhut up in houſes, where they happily never enter. They bark nearly like ſmall dogs. When ſtruck at with a ſtick, they ſeize it ſo forcibly with their teeth, that they allow themſelves to be carried to a conſiderable diſtance without quitting their hold. They dig holes in the earth, and make roads like the moles, in queſt of roots. At particular times, they aſſemble together, and the whole die in company. They are very courageous, and defend themſelves againſt other animals. It is not known from whence they come. The vulgar believe that they fall from the clouds along with the rain *.

The

they ſeem likewiſe to commit ſuicide; for they are often found ſuſpended on the branches of trees; and they probably throw themſelves, in troops, into the waters, like the ſwallows; *Hiſt. de la Lapponie, par Schoeffer, p.* 322. *Nota*, It would appear that the lemings, like the rats, mutually deſtroy and eat one another, when paſture fails them; and that this is the reaſon why their deſtruction is as ſudden as their multiplication.

* Beſtiolæ quadrupedes, *lemmar* vel *lemmus* dictæ, magnitudine ſoricis, pelle varia per tempeſtates et repentinos imbres —incompertum unde, an ex remotioribus inſulis et vento delatæ, an ex nubibus fœculentis natæ deſerantur. Id tamen compertum eſt, ſtatim atque deciderint, reperiri in viſceribus herbæ crudæ nondum incoctæ. Hæ more locuſtarum in maximo examine cadentes omnia virentia deſtruunt, et quæ morſu tantum attigerint emoriuntur virulentia; vivit hoc agmen donec non guſtaverit herbam renatam. Conveniunt quoque gregatim quaſi hirundines

The male is generally larger than the female, and his black ſpots are alſo larger. Upon the renewal of the graſs, they infallibly die. In fine weather they take to the water in vaſt multitudes; but, when a breeze of wind riſes, they are all drowned. The number of theſe animals is ſo prodigious, that, when they die, the air is infected, and produces many diſeaſes. They even ſeem to infect the plants which they gnaw; for the paſture then kills the cattle. The fleſh of the lemings is not good; and their ſkin, though the hair be fine, does not anſwer for making furs, becauſe it is too thick.

evolaturæ, ſed ſtato tempore aut moriuntur acervatim cum lue terræ (ex quarum corruptione aër fit peſtilens, et afficit incolas vertigine et ictero), aut his beſtiis dictis vulgariter *lekat*, vel *hermelin*, conſumuntur, unde iidem hermelini pingueſcunt; *Ol. Mag. Hiſt. Gent. Sept. pag.* 142.

THE SEA OTTER*.

'THE *saricovienne*,' (or sea otter,) says Thevet, 'is found along the river Plata. 'It is of an amphibious nature, living more in

* Sea otter, with a black nose; upper jaw longer and broader than the lower; long white whiskers; irides hazel; ears small, erect, and conic. In each jaw there are four cutting teeth. The grinders are broad, adapted for breaking and comminuting crustaceous animals and shell fish. The skin is thick. The hair is long, thick, and excessively black and glossy, beneath which is a soft down. The colour sometimes varies to silvery. The legs are thick and short. The toes are covered with hair, and joined by a web. The hind-feet are exactly like those of a seal, and have a membrane skirting the outside of the exterior toe, like that of a goose. The length, from nose to tail, is four feet two inches. The tail is thirteen inches long, flat, fullest in the middle, and sharp pointed. The biggest of these animals weigh seventy or eighty pounds; *Pennant's Synopf. of Quad. p.* 241.

Iiya, quæ et *carigueibeju* appellatur a Brasilienfibus; *Marcgr. Hift. Nat. Brafil. p.* 234.

Lutra nigricans, cauda depreffa et glabra; *Barrère Hift. de la Franc. Equin. p.* 155.

Lutra Brafilienfis; *Raii Synopf. Quad. p.* 189.

Loutre ou carigueibeju; *Defmarchais, tom.* iii. *p.* 306.

Guachi; *Gumilla Orenoque, tom.* iii. *p.* 239.

Le faricovienne; *Buffon.*

Muftela lutris, plantis palmatis pilofis, cauda corpore quadruplo breviore; *Linn. Syft. Nat. p.* 66.

Lutra atri coloris, macula fub gutture flava; *Briffon. Quad. p.* 202.

Lutra marina, Kalm; *Nov. Com. Petrop. tom.* ii. *p.* 367. *tab.* 16.

Sea otter; *Hift. of Kamptfchatka, p.* 122. *Muller's Voy. p.* 57.

'the water than upon land. This animal is as 'large as a cat; and its ſkin, which is a mix-'ture of a gray and black, is as fine as velvet. 'Its feet reſemble thoſe of water-fowl; and its 'fleſh is extremely good and delicate *.' I begin with the above paſſage, becauſe the animal is unknown to the naturaliſts under this name, and becauſe they know not that the *carigueibeju* of Braſil, which is the ſame animal, has membranes between the toes. Marcgrave, indeed, who gives a deſcription of it, mentions not this character, which is an eſſential one, ſince it brings this ſpecies as near as poſſible to that of the otter.

Beſides, I believe that the animal mentioned by Gumilla, under the name of *guachi* †, may be the ſame with the ſaricovienne, which is a

* Singularités de la France antarctique, par Thevet, p. 107.

† On the rivers which fall into the Oronoko, there are a great many water-dogs, which the Indians call *guachi*. This animal ſwims ſwiftly, and feeds upon fiſhes. It is amphibious; but goes likewiſe in queſt of food upon the land. It digs ditches on the banks, where the female brings forth her young. Theſe ditches are not made in retired places, but where the animals live in common, and come to amuſe themſelves. I carefully examined their habitations, and found them to be always exceedingly clean. They leave not the ſmalleſt herb in the neighbourhood. They heap up, at a diſtance, the fragments of the fiſhes they eat, and, by leaping, going, and returning, they make their roads extremely neat and commodious; *Hiſt. del Orenoque, par Gumilla, tom.* iii. *p.* 29. *Nota*, Theſe characters correſpond with the ſaricovienne; but the name *guachi* ſeems to be here improperly applied, becauſe it probably belongs to a ſpecies of mouffette, which we have called the *coaſe*.

ſpecies

ſpecies of otter common throughout all South America. From the deſcription given of it by Marcgrave and Deſmarchais *, it appears, that this amphibious animal is as large as a middle-ſized dog; that the top of its head is round like that of the cat; that its muzzle is ſomewhat long, like that of the dog; that it has the teeth and whiſkers of a cat; ſmall, round, black eyes; ears roundiſh, and placed low; five toes on each foot, with the thumbs ſhorter than the other toes, which are all armed with ſharp brown claws. The tail is as long as the hind-legs. The hair is pretty ſhort and very ſoft. It is black on the body and brown on the head, with a white ſpot under the chin. Its cry is nearly like that of a young dog; and it is ſometimes interrupted by another cry ſimilar to that of the ſagoin, or fox-tailed monkey. It feeds upon crabs and fiſhes; but it may likewiſe be nouriſhed with the flour of manioc diluted in water. Its ſkin makes a good fur; and, though it lives chiefly on fiſhes, its fleſh is very good, wholeſome, and has no bad flavour.

* Voyage de Deſmarchais, tom. iii. p. 306.

THE CANADIAN OTTER.

THIS otter, which is much larger than ours, and ought to be found in the north of Europe, as well as in Canada, affords me an opportunity of enquiring whether it is the ſame animal with the *latax* of Ariſtotle, which, he remarks, is much larger and ſtronger than the common otter. But the ideas he gives of it correſpond not entirely with this large otter; and, finding that it was perfectly ſimilar to the common otter, except in ſize, I thought it was not a particular ſpecies, but a ſimple variety: And, as the Greeks, and eſpecially Ariſtotle, were careful not to give different names but to diſtinct ſpecies, we are perſuaded, that the *latax* is another animal. Beſides, as the otters, like the beavers, are generally larger, and have finer and blacker hair in America * than in Europe, this otter of Canada ought to be longer and blacker than the French otter. But, on conſidering what the *latax* of Ariſtotle might be, I conjectured that it was the animal mentioned by Be-

* The otters of North America differ from thoſe of France by being commonly longer and blacker. They are of different ſhades, and ſome of them are as black as jet; and theſe laſt are deareſt and in greateſt requeſt; *Deſcript. de l'Amerique Septent. par Dennis, tom.* ii. *p.* 280.

lon,

lon, under the name of the *ſea-wolf*. I ſhall, therefore, relate what Ariſtotle has ſaid of the *latax*, and Belon of the *ſea-wolf*, that the reader may have an opportunity of making the compariſon *.

In this paſſage, Ariſtotle mentions ſix amphibious animals; and, of theſe ſix, we know only three, the common ſeal, the beaver, and the otter. The other three, namely, the *latax*, the *ſatherion*, and the *ſatyrion*, remain unknown, becauſe they are only pointed out by their names, without any deſcription. In this caſe, as in all thoſe where no direct induction can be derived from a knowledge of the object, we muſt have

* Sunt inter quadrupedes feraſque, quæ victum ex lacu et fluviis petant; at vero a mari nullum, præterquam vitulus marinus. Sunt etiam in hoc genere fiber, ſatherium, ſatyrium, lutris, *latax* quæ latior lutra eſt, denteſque habet robuſtos, quippe quæ noctu plerumque egrediens, virgulta proxima ſuis dentibus ut ferro præcidat; lutris etiam hominem mordat, nec deſiſtit, ut ferunt, niſi oſſis fracti crepitum ſenſerit. Lataci pilus durus, ſpecie inter pilum vituli marini et cervi; *Ariſt. Hiſt. Anim. lib.* viii. *cap.* v.—The ſea-wolf: 'As the Engliſh have no land-wolves, Nature has 'furniſhed them with an animal that frequents the ſhores of their 'ſeas, which makes ſo near an approach to our wolf, that, if it 'did not prefer fiſhes to ſheep, we would reckon it to be the very 'ſame, whether we conſider its ſize, its hair, its head (which is 'always large), or its tail. But as this animal (he remarks) lives 'only on fiſhes, and was unknown to the ancients, it ſeems to be 'no leſs ſingular than the double-lived animals mentioned above; 'for which reaſon, I have given a figure of it;' *Belon de la Nature de Poiſſons, p.* 18. *Note*, The figure is on p. 19. and reſembles the hyæna more than any other animal; but it could never be the hyæna; for he is not amphibious; neither does he live on fiſhes; and, beſides, he belongs to a different climate.

recourſe to the mode of excluſion; but this mode can never be employed with ſucceſs, except when we know nearly the whole ſubject. For example, from long ſtudy, I believe that I am acquainted with nearly the whole quadruped tribe. I know that Ariſtotle could have no information concerning thoſe which are peculiar to the continent of America. Of the quadrupeds, I likewiſe know all thoſe which are amphibious: From theſe I, in the firſt place, ſtrike off all thoſe which belong to America, as the tapir, the cabiai, the ondatra, or muſk-rat, &c. There remain only the amphibious animals of our own continent, which are, the hippopotamus, the walrus or ſea-cow, the ſeals or ſea-calves, the ſea-wolf of Belon, the beaver, the otter, the ſable, the water-rat, the Muſcovy muſk-rat, the water ſhrew-mouſe, and, if you chooſe, the ichneumon, which ſome authors have regarded as an amphibious animal, and called it the *Egyptian otter*. From this number, I retrench the walrus or ſea-cow, which being found only in the northern ſeas, was unknown to Ariſtotle. I likewiſe retrench the hippopotamus, the water-rat, and the ichneumon, becauſe he mentions them elſewhere under their proper names. Laſtly, I retrench the ſeals, the beaver, and the otter, which are well known, and the water ſhrew-mouſe, which is too ſimilar to the land one to have ever received a ſeparate name. There remain,

main, then, the ſea-wolf of Belon, the ſable, and the Muſcovy muſk-rat, for the *latax*, the *ſatherion*, and the *ſatyrion*. Of theſe three animals, the ſea-wolf of Belon alone is larger than the otter: Hence it alone can repreſent the *latax*; and, conſequently, the ſable and the Muſcovy muſk-rat muſt repreſent the *ſatherion* and the *ſatyrion*. Theſe conjectures, which I believe to be well-founded, are not, however, of the number of thoſe which time can elucidate, unleſs ſome Greek manuſcripts, hitherto unknown, ſhall be diſcovered, where theſe names are employed, and new explications given of them.

The SEALS, the WALRUS, and the MANATI.

LET us aſſemble, for a moment, all the quadrupeds into one group, and let the intervals or ranks repreſent the proximity or diſtance between each ſpecies. Let us place in the centre, the moſt numerous genera, and on the flanks thoſe which are leaſt numerous. Let us confine the whole within narrow bounds, that we may have the more diſtinct view of them; and we ſhall find, that it is impoſſible to round this incloſure. Though all quadrupeds are more cloſely connected together than to any other being, yet ſeveral of them make prominent points, and ſeem to fly off in order to join other claſſes of animated nature. The apes make a near approach to man. The bats are the apes of birds, which they imitate in their flight. The porcupines and hedge-hogs, by the quills with which they are covered, ſeem to indicate that feathers are not confined to birds. The armadillos, by their ſcaly ſhells, approach the turtle and the cruſtaceous animals. The beavers, by the ſcales on their tails, reſemble the fiſhes. The ant-eaters, by their beak or trunk without teeth, and the length of the tongue,

Plate CCLIII.

CANADIAN OTTER.

claim an affinity to the fiſhes. In fine, the ſeal, the walrus, and the manati, are a ſeparate corps, and make a great projection, with a view to arrive at the cetaceous tribes.

Seal, *walrus*, and *manati*, are rather generic than ſpecific denominations: Under the ſeal we ſhall comprehend, 1. The *phoca* of the ancients, which is probably that we have repreſented in the figure. 2. The common ſeal, or ſea-calf. 3. The great ſeal, of which Mr. Parſons has given a figure and deſcription in the *Philoſophical Tranſactions*, No. 469. 4. The very large ſeal, or *ſea-lion*, deſcribed and painted by the author of Anſon's voyage.

Under the name *walrus*, we comprehend the animals commonly called *ſea-cows*, or *ſea-horſes*, of which we know two ſpecies, the one found only in the northern, and the other in the ſouthern ſeas; the laſt is called *dugon* or *Indian walrus*. In the laſt place, under the term *manati*, we comprehend the animals called *lamantins*, or *ſea-oxen*, in St. Domingo, Cayenne, and other parts of South America, as well as the *lamantin* of Senegal, and other parts of the coaſt of Africa, which appears to be only a variety of the American kind.

The ſeal and walrus are more nearly allied to the quadrupeds than to the cetaceous animals; becauſe they have a kind of fore-feet. But the manati, which have only two fore-feet, reſemble the cetaceous tribes more than the quadrupeds.

Both

Both differ ftom other animals by a ſingular character: They alone can live equally in air and in water; and, conſequently, they alone merit the appellation of *amphibious*. In man, and the other terreſtrial viviparous animals, the *foramen ovale* of the heart, which permits the fœtus to live without reſpiration, cloſes the moment after birth, and remains ſhut during life. In the ſeal and walrus, on the contrary, it is always open, though the mothers bring forth their young on land, and reſpiration commences immediately after birth, as in all other animals. By means of this perpetual aperture in the *ſeptum* or partition of the heart, which allows a communication of the blood from the vena cava to the aorta, theſe animals enjoy the privilege of reſpiring, or not, at their pleaſure. This ſingular power is common to the whole of them: But each poſſeſſes peculiar faculties, which ſhall be pointed out, as far as we have been able to learn, in the hiſtory of the particular ſpecies.

THE SEALS*.

IN general, the ſeals, like man, have a round head; a broad muzzle, like the otter; large high placid eyes; ſmall or no external ears,

* In ſeveral European languages, theſe animals have received the denomination of *ſea-calves*, *ſea-dogs*, *ſea-wolves*, and *ſea-foxes*.

being

being only two auditory paſſages on each ſide of the head; whiſkers round the mouth; teeth ſimilar to thoſe of the wolf; the tongue forked at the end; a fine neck; the body, hands, and feet covered with ſhort and pretty coarſe hair; no apparent arms, but rather two membranes or ſkins, inveſting five fingers, and terminated by five claws; two feet without legs, and perfectly ſimilar to the hands, except that they are larger, and turn backward to unite with a very ſhort tail, which they accompany on each ſide; a long body, like that of a fiſh, but thick at the breaſt, narrow at the belly, without haunches, crupper, or thighs. The ſtructure of this animal is ſo ſtrange, that it ſerved as a model, upon which the imagination of the poets framed the Tritons, Sirens, and Sea-gods, with a human head, the body of a quadruped, and the tail of a fiſh. The ſeal, in effect, reigns in this mute empire, by his voice, his figure, his intelligence, and his talents, which are common to him with the inhabitants of the land, and render him ſo ſuperior to the fiſhes, that they ſeem not only to belong to another order of beings, but to a different world. This amphibious animal, though his nature be very diſtant from that of our domeſtic animals, is ſuſceptible of a ſpecies of education. He is reared by keeping him often in water; he is taught to give a ſalute with his head and his voice; he comes when called upon, and exhi-

bits

bits ſeveral other marks of intelligence and docility *.

His brain and cerebellum are proportionally larger than in man. His ſenſes are as good as thoſe of any quadruped; and, conſequently, his ſenſations are equally vivacious, and his intellect equally active: Both are exhibited in the gentleneſs of his manners, his ſocial diſpoſitions, his affection for the female, his attention to his offſpring, and in the expreſſive modulation of his voice, which is ſuperior to that of any other animal. He is alſo endowed with ſtrength † and weapons of defence. His body is large and firm, and his teeth and claws are ſharp. Beſides, he enjoys advantages which are peculiar to him. He is neither afraid of cold nor of heat. He lives indifferently on herbs, fleſh, or fiſh. He inhabits, without inconvenience, water, land, and ice. He, along with the walrus, alone deſerves the epithet of *amphibious*. He

* Vituli marini accipiunt diſciplinam, voceque pariter et viſu populum ſalutant: Incondito fremitu nomine vacati reſpondent; *Plin. Hiſt. Nat. lib.* ix. *cap.* 13.—— A Dutch ſailor had tamed a ſea-calf to ſuch a degree, that it performed a hundred monkey tricks; *Voyag. de Miſſon, tom.* iii. *p.* 113.

† On the coaſts of Canada, we often heard, during the night, the voice of the ſea-wolves, reſembling nearly that of cats making love; *Hiſt. de la Nouv. Franc. par l'Eſcarbot. p.* 600. ——When we reached the iſland of Juan Fernandes, we heard the ſea-wolves crying day and night; ſome of them bleated like lambs, and others barked like dogs, or howled like wolves; *Woods Rogers, p.* 206.

alone

alone has the *foramen ovale* of the heart open *; and, conſequently, he alone can diſpenſe with reſpiration, the elements of air and water being equally agreeable to him. The otter and beaver are not really amphibious, ſince air is their proper element; and, as they are deprived of this aperture through the ſeptum of the heart, they cannot remain long under water, but are obliged either to leave it, or to raiſe their heads above it, in order to reſpire.

But theſe great advantages are balanced by imperfections ſtill greater. The ſeal is a kind of crippled animal. His arms, thighs, and legs, are almoſt entirely ſhut up within his body. Nothing appears without, except his hands and feet, which are, it is true, divided into five fingers; but theſe fingers are not ſeparately moveable, being united by a ſtrong membrane; and theſe extremities are rather fins than hands and feet, a kind of inſtruments adapted for ſwimming, and not for walking. Beſides, the feet are directed backward, like the tail, and cannot ſupport the body of the animal,

* As the ſeals are deſtined to remain a long time in the water, and as the tranſmiſſion of the blood through the lungs cannot be performed without reſpiration, they have the foramen ovale open, as in the fœtus, which never reſpires. It is an aperture which makes a communication between the right ventricle of the heart and the left, and allows the blood to paſs directly from the cava into the aorta, inſtead of the long winding courſe of the lungs; *Hiſt. de l'Acad. des Sciences, tom.* i. *p.* 84.

which,

which, when on land, is under the neceſſity of trailing itſelf like a reptile *. This motion muſt be painful; for his body being unable to bend in the form of an arch, like the ſerpents, in order to obtain different points of ſupport, and to advance by means of the reaction of the ground, the ſeal would remain fixed in the ſame place, were it not for his hands and tail, which he attaches to whatever he can lay hold of, and uſes them with ſuch dexterity, that he mounts very quickly upon a high ſhore, upon a rock, and even upon a board of ice, though ſlippery and ſteep †.

He

* The ſea-wolves on the coaſt of Canada, which ſome call *ſea-calves*, are as large as big dogs. They keep almoſt perpetually in the water, never removing to any diſtance from the margin of the ſea. Theſe animals rather crawl than walk; for, when out of the water, they only ſlide along the ſand or mud.——The females bring forth their young upon rocks or ſmall iſlands. They live upon fiſhes, and are fond of cold countries; *Voyage de la Hontan, tom.* ii. *p.* 45. 'The ſeals are as big as calves, the head of them like a dog, therefore called by the Dutch the *ſea-hounds*. Under each ſhoulder grows a long thick fin: Theſe ſerve them to ſwim with when in the ſea, and are inſtead of legs to them when on the land for raiſing their bodies up on end, by the help of theſe fins or ſtumps, and ſo having their tail parts drawn cloſe under them, they rebound as it were, and throw their bodies forward, drawing their hinder-parts after them; and then again riſing up and ſpringing forward with their fore-parts alternately, they lie tumbling thus up and down all the while they are moving on land;' *Dampier's Voyage, p.* 89.

† The ſea-calves have very ſharp teeth, with which they cut a ſtick as thick as a man's arm. Though they appear to be lame behind, they climb the boards of ice, upon which they ſleep.——The ſea-calves which frequent the coaſts are fatter, and yield more oil, than thoſe that inhabit the ice.——

We

He walks more rapidly than one ſhould imagine, and, though wounded, he often eſcapes from the hunters by flight *.

The ſeals live in ſociety, or, at leaſt, great numbers of them frequent the ſame places. The north is their natural climate, though they can live in the temperate zones, and even in warm climates; for we find ſome of them upon the coaſts of almoſt every European ſea, not excluding the Mediterranean. They are likewiſe ſeen in the ſouthern ſeas of Africa and America †. But they are infinitely more numerous in the northern ſeas of Aſia, Europe ‡, and America; and

We ſometimes find numbers of ſea-calves upon ſuch high and precipitous boards of ice, that it is aſtoniſhing how they ſhould be able to climb them; *Deſcript. de la Pêche de la Baleine, par Zorgdrager, p.* 193.

* I gave ſeveral ſtrokes of my ſword to a ſea-calf, which prevented it not from outrunning me; and it plunged into the water, from which I never ſaw it riſe again; *Recueil des Voyages du Nord, tom.* ii. *p.* 130.

† The ſea-calves are frequent in the northern parts of Europe and America, and in the ſouthern parts of Africa, as about the Cape of Good Hope, and at the Straits of Magellan: And though I never ſaw any in the Weſt Indies, but in the Bay of Campeachy, at certain iſlands called the Alceranes, and at others called the Deſerts; yet they are over all the American coaſts of the South Seas, from Terra del Fuego, up to the Equinoctial line; but, to the north of the Equinox again, in theſe ſeas, I never ſaw any, till as far as 21 north lat. Nor did I ever ſee any in the Eaſt Indies; *Dampier's Voyage, p.* 90.

‡ In mari Bothnico et Finnico, maxima vitulorum marinorum ſive phocarum multitudo repiritur; *Ol. Magn. de Gent. Septent. p.* 163.——On the weſt coaſt of Greenland, we find

and they are alſo very common in Magellan's Straits, the iſland of Juan Fernandes *, &c. In different climates, the ſpecies varies in ſize, colour, and even in figure. We have ſeen ſome of theſe animals alive, and are poſſeſſed of ſeveral ſtuffed ſkins. From this number we have ſelected two for the engraver. The firſt is the common ſeal † of our ocean, of which there are ſeveral

find many ſea-calves, but very few about Spitzbergen. ——— The largeſt ſea-calves are generally from five to eight feet long, and they furniſh the beſt oil. —— They are as fond of ſporting on the ice as on land; and whole flocks of them are ſometimes collected on the ſame board of ice. —— The ſea-calves are chiefly taken between the 74th and 77th degree, upon the weſtern borders of the ice. They are alſo taken every year in Davis's Straits, and near Nova Zembla; *Deſcript. de la Pêche de Baleine, par Corneille Zorgdrager, vol.* i. *p.* 192. *tranſlated from the German by M. le Marquis de Montmirail.*

* The ſeals come to the iſland of Juan Fernandes in the month of September to bring forth their young. They are then ſo fierce, that, inſtead of retiring from man, they advance in order to bite him, though armed with a bludgeon. . . . . The margin of the ſea is ſometimes covered with them to the extent of more than half a mile; *Woods Rogers.*

† Common ſeal with large black eyes; large whiſkers; oblong noſtrils, flat head and noſe; tongue forked at the end; two canine teeth in each jaw, ſix cutting teeth in the upper jaw, and four in the lower; no external ears; body covered with thick ſhort hair; ſhort tail; and five palmated toes on each foot, furniſhed with ſtrong ſharp claws. The uſual length is from five to ſix feet. The colour is very various, duſky, brinded or ſpotted with white and yellow; *Pennant's Synopſ. of Quad. p.* 339.

Phoca; *Ariſt. Hiſt. Anim. lib.* vi. *c.* xii. *Oppian. Halieut. v.* 376. *Geſner. Piſc. p.* 830. *Worm. Muſ. p.* 289. *Klein Quad. p.* 93. *Briſſon, Quad. p.* 162.

Vitulus

ſeveral varieties. We have ſeen one which ſeemed to differ in the proportions of its body from the common kind; for its neck was ſhorter, its body longer, and its claws larger. But theſe differences are not ſufficient to conſtitute a diſtinct ſpecies. The ſecond is the ſeal of the Mediterranean and ſouthern ſeas, which we preſume to be the *phoca* of the ancients, and a diſtinct ſpecies; for it differs from the others by the quality of its hair, which is flowing and almoſt black, while that of the common kind is gray and coarſe. It differs ſtill more in the form of the teeth and ears; for it has a kind of ſmall external ear, which the other wants: Its cutting teeth alſo terminate in two points, while thoſe of the other are ſmooth and ſharp-edged, like thoſe of the dog, wolf, and other quadrupeds. Its arms are likewiſe placed lower or more behind. Theſe differences, however, are perhaps only varieties depending on the climate, and not ſpecific differences; eſpecially as, in places where the ſeals abound, we find them larger and ſmall-

Vitulus maris Mediterranei et oceani; *Roddelet. p.* 453. 458.
Le veau marin ou loup de mer; *Belon. p.* 25.
Seal, ſeoile, or ſea-calf, phoca ſive vitulus marinus; *Raii Synopſ. Quad. p.* 189. *Phil. Tranſ. vol.* xlvii. *p.* 120. *tab.* 6. *fig.* 3.
Caſſigcack; *Crantz. Hiſt. of Greenl. vol.* i. *p.* 123.
Phoca vitulina, capite lævi inauriculato; *Linn. Syſt. Nat. p.* 56.
Sial; *Faun. Suec. No.* 4.
Le Phoque; *Buffon.*
Seal; *Britiſh Zoology, vol.* i. *p.* 71.

er, thicker and thinner, and of various colours, according to their ſex and age *.

It was from a conformity, which, at firſt view, might appear ſlight, joined to ſome fugitive relations, that we judged this ſecond or little ſeal to be the phoca of the ancients. We have been aſſured, that the individual in our poſſeſſion was brought from India; and it is very probable that it came from the Levant. It was an adult; for it wanted no teeth. Its ſize was at leaſt a fifth part leſs than that of the full grown ſeals in our ſeas, and two thirds leſs than thoſe of the frozen ſea; for it exceeded not two feet three inches in length,

* Canities ut homini et equo, ſic quoque vitulo marino accidit; *Olai Magn. de Gent. Sept. p.* 165.—The ſea-calves are covered with ſhort hair, of various colours: Some of them are black and white, others yellow, grey, and even red; *Deſcript. de la Pêche de Baleine, par Zorgdrager, p.* 191.—Near the bay of St. Matthew, in Magellan's Straits, we diſcovered two iſlands, where the ſea-wolves were ſo numerous, that we could have loaded our five veſſels with them in two hours. They were of different colours, and of the ſize of a calf; *Hiſt. des Navigat. aux Terres Auſtrales, tom.* i. *p.* 127.—The ſea-calves of Spitzbergen have their heads of different figures: Some of them are rounder, others longer and thinner under the muzzle.——They vary in colour.——Some of them are ſpotted like tigers; others are ſpotted with black and white: Some of them are yellow, others grey, and others red.——In ſome, the pupils of the eyes are of a cryſtalline colour, in others white, in others yellowiſh, and in others reddiſh; *Recueil des Voyages du Nord, tom.* ii. *p.* 118.—The ſkin of the ſea-calf is covered with ſhort hair of various colours. Some of theſe animals are white, as the whole of them are when firſt brought forth; and, as they grow up, ſome become black, others red, and others have a mixture of all theſe colours; *Charlevoix, tom.* iii. *p.* 147.

while

while that described by Mr. Parsons, though not an adult, as it wanted several teeth, was seven feet and a half. Now, the characters which the ancients ascribe to their *phoca*, correspond not with an animal of such magnitude, but apply to this small seal, which they frequently compare to the beaver and otter, animals that never can be compared with the large seals of the north. There is another relation, which, though false in its object, could never be attributed to our seals, or to those of the northern seas. The ancients, when treating of the *phoca*, tell us, that its hair waves, and, from a natural sympathy, follows the motions of the sea; that it lies backward when the tide ebbs, and forward when it flows *; and that this singular effect continues long after the skin has been separated from the animal. Now, this quality could never have been imagined with regard to our seals or those of the north; because the hair of both is short and stiff. But it agrees, in some measure, with the small seal, whose hair is waving, and much longer and suppler than that of the other kinds. In general, seals of the southern

* Pelles eorum etiam detractas corpori sensum æquorum retinere tradunt, semper æstu maris recedente inhorrescere; *Plin. Hist. Nat. lib.* ix. *cap.* xiii.—Severinus asserts, that he saw this wonderful appearance; but he expresses it with such exaggeration as destroys its credibility. When the north wind blows, says he, the hairs which had been raised by the south wind, fall down so close, that they seem to disappear; *Mont. pour servir à l'Hist. des Animaux, part.* i. *p.* 193.

have finer and ſofter hair than thoſe of the northern ſeas*. Beſides, Cardan affirms poſitively †, that this quality, which had been conſidered as fabulous, is found to be real in the Indies. Without giving more faith to Cardan's aſſertion than it deſerves, it at leaſt ſhows, that this quality is peculiar to the Indian ſeal. Perhaps the appearance, if it exiſts, is electrical; and both ancients and moderns, being ignorant of the cauſe, have aſcribed the effect to the ebbing and flowing of the ſea. But, however this matter ſtands, the reaſons already given are ſufficient to found a preſumption that the ſmall ſeal is the *phoca* of the ancients. It is likewiſe probable that it is the ſame with Rondeletius's *Mediterranean ſeal* ‡, which, he remarks, has a body proportionally longer and thinner than the ſeal of the ocean. The large ſeal, of which Mr. Parſons has given a figure and deſcription, and which was probably brought from the northern ſeas, ſeems to be a ſpecies diſtinct from the other two; for, though ſo young as to have hardly any teeth, it was more than double the magnitude of the common kind ‖.

M. Klein,

* At the iſland of Juan Fernandes, the ſea-calves have a fur ſo fine, and ſo ſhort, that I have ſeen nothing equal to it elſewhere; *Dampier*, *vol.* i. *p.* 118.

† Cardan de Subtilitate, lib. x.

‡ Rondelet. de Piſcibus, lib. xvi.

‖ Great ſeal, reſembling the common, but grows to the length of twelve feet: (A gentleman of my acquaintance ſhot one of that

ſize

M. Klein *, as well as Mr. Parſons †, have ſaid a great deal concerning this animal in a few words.

From

ſize in the north of Scotland.) That deſcribed in the Philoſophical Tranſactions was ſeven feet and a half long, yet ſo young as to have ſcarce any teeth. The common ſeal is at full growth when it has attained the length of ſix. It inhabits the coaſts of Scotland, and the ſouth of Greenland; *Pennant's Synopſ. of Quad. p.* 341.

Ulſuk; *Crantz's Greenland, vol.* i. *p.* 125.

* Klein de Quad. p. 93.

† This ſea-calf was ſhewed at Charing-croſs, London, in the month of February 1742. . . . . The figures given by Aldrovandus, Johnſton, and others, being profiles, lead us into two errors: 1ſt, They make a cubit in the fore-limb, which is not viſible in any ſhape from the ſurface of the body: And, 2dly, make the poſterior parts terminate in two fins, which, on the contrary, are actually webbed feet, like thoſe of water-fowl, conſiſting of five toes, each having three articulations, and ending with nails of a darkiſh colour. The nails of the fore-paws are very conſiderable, being like the paws of a mole, contrived for crawling upon land, and partly for ſwimming, by a narrower web between each toe; but the hinder feet are extenſive webs, ſerving alone to drive or row the creature in the waters. . . . . The animal, which was a female, died yeſterday morning, *Feb.* 16, and the *viſcera* were as follows: The ſtomachs, inteſtines, bladder, kidneys, ureters, diaphragm, lungs, great blood-veſſels, and *pudenda*, were like thoſe of a cow. The hairs of the whiſkers are very long and clear. The ſpleen was two feet long, four inches broad, and very thin. The liver conſiſted of ſix lobes, each hanging as long and lank as the ſpleen, with a very ſmall gall-bladder. The heart was long and flabby in its contexture in general; having a large *foramen ovale*, and very great *columnæ carnoſæ*. In the lower ſtomach were about four pounds weight of flinty pebbles, of which theſe I have the honour to lay before you are part; all which are ſharp and angular, as if the animal choſe them of that form for cutting the food. ——— The uterus is of the horned kind, each *cornu* being conſiderably thicker than the

From what has been remarked, it appears, that there are three diſtinct ſpecies of the ſeal: The ſmall black ſeal of India and the Levant, the common ſeal of our ſeas, and the large ſeal of the northern ocean; to the firſt of which, all that the ancients have written concerning the *phoca* muſt be referred. Ariſtotle knew this animal; for he tells us, that it is of an ambiguous nature, an intermediate creature between aquatic and terreſtrial animals; that it is an imperfect quadruped; that it has no external ears, but only two conſpicuous auditory paſſages, and that it has a forked tongue, paps for ſuckling, and a ſmall tail like that of the ſtag. But he ſeems to have been deceived when he ſays, that this animal has no gall-bladder. Mr. Parſons, indeed, acknowledges, that the gall-bladder of the large ſeal he has deſcribed was very ſmall. M. Daubenton, however, found, in our ſeal, which he diſſected, that the gall-bladder was proportioned to the ſize of the liver; and the Gentlemen of the Academy found a gall-bladder

body, or duct leading to them.——The *ovaria* are very large, being granulated on the ſurface with the *ova*, under a very thin membrane; and the opening into the tubes leading to the *cornua* is a great hole. I have annexed a drawing of this part—as well as of the animal itſelf, which is thought perfectly like the original. The animal is viviparous, and ſuckles its young by the mamillæ, like quadrupeds, and its fleſh is carnous and muſcular. This was very young, though ſeven feet and a half in length, having ſcarce any teeth, and having four holes regularly placed about the navel; *Phil. Tranſ. No.* 469. *p.* 383.

in

in the ſeal they deſcribe; but mention not that it was remarkably ſmall.

Ariſtotle, beſides, could have no knowledge of the large ſeals produced in the frozen ſea; becauſe, in his time, the whole north of Europe and of Aſia were entirely unknown. The Greeks, and even the Romans, regarded France and Germany as their north. The Greeks, particularly, knew none of the animals peculiar to theſe countries. Hence Ariſtotle, who mentions the *phoca* as a common animal, can mean nothing elſe than the Mediterranean ſeal.

Theſe three animals, though different in ſpecies, have many common properties, and ought to be regarded as of the ſame nature. The females bring forth in winter, and place their young upon a bank of ſand, a rock, or a ſmall iſland. They ſit on their hind-legs *, to allow their young to ſuck; and they continue to nouriſh them in this manner during twelve or fifteen days, without removing them from the place of their birth; after which the mother carries them to the ſea, and learns them to ſwim and to ſearch for food. When fatigued, ſhe places them on her back. As every litter conſiſts only of two or three, her cares are not much divided, and their education

* The ſeals have two fins on each ſide the rump, which ſerve inſtead of a tail in the ſea; and, on land, they ſit on them, when they give ſuck to their young; *Dampier, vol.* i. *p.* 82.

is

is ſoon completed. Beſides, nature has beſtowed on theſe animals uncommon ſagacity and ſentiment. When aſſiſtance is neceſſary, they underſtand and mutually aid one another. The young know their mother in the midſt of a numerous troop. They diſtinguiſh her voice, and, when ſhe calls, they never fail to come *. We know not the period of geſtation; but, if we judge of it from that of the growth, the duration of life, and the magnitude of the animal, it muſt be ſeveral months: It is ſome years before they acquire their full growth, and the duration of their life muſt be proportionally long. I am even inclined to believe that they live longer than is generally imagined, perhaps above a hundred years; for the cetaceous animals live much longer than the quadrupeds; and as the ſeal is the intermediate link between both, it ought to partake of the nature of the former, and, of courſe, enjoy life longer than the latter.

The voice of the ſeal has been compared to the barking of a hoarſe dog: When young, it is clearer, and reſembles the mewing of a cat. The young, when carried off from the mother, mew continually, and ſometimes die of hunger rather than take the food that is offered to them. The old ſeals bark at thoſe who ſtrike them, and uſe every effort to bite and avenge themſelves. In general, they are not very timid, and even

* Dampier, vol. i. p. 89.

ſhow

ſhow marks of courage. Inſtead of being afraid at lightning, or thunder, it ſeems to entertain them. During a tempeſt, they leave the water, and even the ice, to avoid the ſhock of the waves; and they come upon the land to amuſe themſelves with the ſtorm, and to receive the rain, of which they are exceedingly fond. They have naturally a diſagreeable ſmell, which is felt at a great diſtance, when numbers of them are collected in one place. When purſued, they frequently void their excrements, which are yellow, and diffuſe an abominable odour. They have a great quantity of blood; and, as they are likewiſe loaded with fat, they are heavy and ſluggiſh. They ſleep much, and very ſound *. They love to ſleep in the ſun, upon boards of ice, and upon rocks; and they may be approached without wakening them. This is the moſt common mode of ſeizing them. They are ſeldom ſhot, becauſe, though the ball enters their head, they do not die ſuddenly, but ſpring into the water, and the hunter loſes them. As they may be approached very near when aſleep, or when at a diſtance from the ſea, their motion being ſlow, they are aſſaulted with clubs and poles. They are very robuſt and tenacious of

* Nullum animal graviore ſomno premitur. Pinnis quibus in mari utuntur, humi quoque pedum vice ſerpunt; ſurſum deorſumque claudicantium more ſe moventes. . . Capitur dormiens viculus marinus, præſertim humano mucrone, quia profundiſſime dormit; *Ol. Magn. de Gent. Sept. p.* 165.

life.

life. 'They die not eaſily,' a traveller remarks; 'for, though mortally wounded, their blood 'almoſt entirely exhauſted, and their ſkin taken 'off, they ſtill live; and it is frightful to ſee 'them in this condition, weltering in their 'blood. We killed one which was eight feet 'long: After ſkinning it, and taking out moſt 'of the fat, notwithſtanding all the blows it had 'received on the head and muzzle, it ſtill endea-'voured to bite, and even ſeized a cutlaſs with 'nearly as much vigour as if it had not been 'wounded. We afterwards thruſt a ſword acroſs 'the heart and liver, from which there iſſued as 'great a quantity of blood as comes from an ox;' *Recueil des Voyages du Nord, tom.* ii. *p.* 117.

The hunting of theſe animals, though not difficult, is very profitable; for the fleſh makes tolerable food *, and the ſkin is a good

* The ſecond ſpecies of ſea-wolves *(ſeals)* is ſmaller than the firſt *(walrus)*. They bring forth their young on land, on the iſlands, upon the ſand, upon rocks, &c.——The ſavages make war with theſe animals. Their fleſh is good, and their oil is uſed as a dainty at all their feaſts. Theſe ſea-wolves come aſhore at all ſeaſons, and never retire far from the land. In fine weather, they are found ſleeping or baſking in the ſun upon the ſands, or upon rocks. In ſome places a band of two or three hundred of them may be ſeen on the ſhore.——They are eaſily killed.—— All the materials for oil are collected about the bladder, into which the ſavages put it, after being melted. This oil is extremely good, and is employed for frying fiſh, and other purpoſes. It is as ſweet and well flavoured as olive oil; and, when put into barrels, it leaves neither odour nor dregs; *Deſcript. de l'Amerique Septent, par Denis, tom.* ii. *p.* 255.

fur:

fur *: The Americans make a kind of balls of it, which they fill with air, and uſe as rafts †. From their greaſe an oil is extracted, which is finer and better taſted than that of the porpoiſe and other cetaceous fiſhes.

To the three ſpecies of ſeals already mentioned, we may perhaps add a fourth, of which the author of Anſon's voyage has given a figure and deſcription under the name of the *ſea-lion* ‡. This

* Beſide the greaſe of the ſea-calf, its ſkin ſells for three, four, or five ſhillings, in proportion to its ſize and beauty; *Deſcript. de la Pêche de la Baleine, par Zorgdrager, p.* 196.——Formerly great quantities of ſea-wolves ſkins were uſed as muffs; theſe are now unfaſhionable, and the ſkins are employed in covering cheſts and trunks. When tanned, they have nearly the ſame grain as Turkey leather. They are not equally fine; but then they are not ſo eaſily ſcratched, and preſerve their freſhneſs for a long time. They make very good boots and ſhoes which repel the water. Benches are likewiſe covered with them; and the wood fails ſooner than the covering; *Hiſt. de la Nouvelle France, par le P. Charlevoix, tom.* iii. *p.* 147.

† Of their ſkins, a kind of balls are made, which, after being filled with air, are uſed as rafts or boats; *Voy. de Frezier, p.* 75.

‡ Leonine ſeal. The *male* has an arched projecting ſnout, hanging five or ſix inches below the lower jaw. The feet are ſhort and duſky, with five toes on each, furniſhed with nails. The hind-feet have the appearance of great laciniated fins. It has large eyes, and great whiſkers. The hair on the body is ſhort, and of a dun colour; that on the neck a little longer. The ſkin is very thick. The length of an old male is twenty feet, and the greateſt circumference fifteen.

Female. Noſe blunt, tuberous at the top; noſtrils wide; mouth breaking very little into the jaws; two ſmall cutting teeth below, two ſmall, and two larger, above; two canine teeth

This animal abounds on the Magellanic coaſts, and at the iſland of Juan Fernandes in the South Sea. The ſea-lions reſemble the ſeal, which is likewiſe very common in the ſame latitudes; but they are much larger. When they have acquired their full growth, they are from eleven to eighteen feet long, and from ſeven or eight to eleven feet in circumference. They are ſo fat, that, after piercing the ſkin, which is an inch thick, there is at leaſt a foot of blubber, before we reach the fleſh: One of them will yield five hundred pints of oil. They are, at the ſame time, very full of blood, which ſprings with great force when the animal is deeply wounded. Upon cutting the throat of an individual, two hogſheads of blood were collected, beſide what remained in the veſſels of the body. Their ſkin is covered with ſhort hair, of a clear tawny colour; but their tail and feet are blackiſh. Their

teeth remote from the preceding; five grinders in each jaw; all the teeth conic; eyes oblique and ſmall; auricles none; fore-legs twenty inches long; toes furniſhed with flat oblong nails; hind-parts, inſtead of legs, divided into two great bifurcated fins; no tail; the whole covered with ſhort ruſt-coloured hair; length, from noſe to the end of the fins, four yards; greateſt circumference two yards and a half; *Pennant's Synopſ. of Quad, p.* 348.

Sea-lion; *Dampier's Voyag. vol.* i. *p.* 90. *vol.* iv. *p.* 15. *Rogers's Voyag. p.* 136. *Anſon's Voyag. p.* 122.

Leo marinus *Ruſſis* ſiwutcha; *Steller, Nov. Com Petrop. vol.* ii. *p.* 361. *Hiſt. Kamtſchatka, p.* 120. *Muller's Exped. p.* 60.

Phoca leonina, capite antice cryſtato; *Linn. Syſt. Nat. p.* 55.

Le lion marin; *Buffon.*

toes

toes are united by a membrane, which extends not to their extremity, and each of them is terminated by a claw. They differ from the common ſeals, not only in magnitude, but in other characters. The males have a kind of large creſt or trunk, which hangs from the end of the upper jaw to the length of five or ſix inches. This part is wanting in the females, which, beſide their being much ſmaller, at once diſtinguiſhes them from the males. Each male carries about him a troop of females, and allows no other male to approach. Theſe animals are truly amphibious. They paſs the ſummer in the ſea, and the winter upon land. In this laſt ſeaſon, the females bring forth, and produce but one or two at a time, which they ſuckle. A new born ſea-lion is as large as a full grown common ſeal.

During all the time the ſea-lions are upon land, they feed upon the herbage which grows on the banks of running waters. When not paſturing, they ſleep in the mire. They are very indolent; and it is difficult to waken them: But they have the precaution of ſtationing males as ſentinels round the places where they ſleep; and theſe ſentinels are ſaid to give warning when danger approaches. Their cries are loud and of various tones. Sometimes they grunt like hogs, and ſometimes ſnort like horſes. The males often quarrel about the females, and inflict dreadful wounds with their teeth. The fleſh of theſe

animals is tolerable food; the tongue, particularly, is equally good as that of an ox. It is very eaſy to kill them; for they can neither fly nor defend themſelves. They are ſo unwieldy, that they can hardly move or turn themſelves. A perſon has only to take care not to come too near their teeth, which are very ſtrong, and with which they inflict mortal wounds *.

From other obſervations, compared with the former, and from ſome concluſions to be deduced from them, it appears that theſe ſea-lions, which are found in the ſouthern point of America, appear again, with little variety, on the northern coaſts of the ſame Continent. The large ſeals of Canada, mentioned by Denis under the denomination of *ſea-wolves*, and which he diſtinguiſhes from the common ſeals, may be of the ſame ſpecies with the ſea-lions. Their young, this author remarks, when brought forth, are thicker and longer than the largeſt hog. Now, it is certain, that the ſeals of our ocean, though full grown, are never of this ſize. The Mediterranean ſeal, or the *phoca* of the ancients, is ſtill leſs. There remain only the ſeals deſcribed by Parſons, whoſe magnitude correſponds with thoſe of Denis †. Parſons does not mention the

* Anſon's Voyage round the World.

† To the teſtimony of Denis, we may ſtill add that of P. Chr. Lecleſg: 'Upon the coaſts of North America, there are 'ſea-wolves, ſome of which are as large as horſes and oxen. 'Theſe ſea-wolves are called *Ouaſpous*;' *Relation de la Gaſpeſie*, *p.* 490.

ſea

ſea where this large ſeal was found. But, whether it came from the north of Europe or from America, it might be the ſame with the ſea-wolf of Denis, and the ſea-lion of Anſon; becauſe its ſize is the ſame, ſince, though it had not nearly acquired its full growth, it was ſeven feet long. Beſides, the moſt remarkable difference, next to that of magnitude, between the ſea-lion and the ſeal, is a large creſt which the male of the former has upon the upper jaw; but the female has no creſt. Parſons did not ſee the male. He deſcribed the female only, which had no creſt, and perfectly reſembled the female ſea-lion of Anſon. To theſe ſimilarities, Parſons adds another, which is ſtill more remarkable: He tells us, that his ſeal had the ſtomachs and inteſtines of a cow; and, at the ſame time, the author of Anſon's Voyages ſays, that the ſea-lion feeds upon herbage during the whole ſummer. Hence it is extremely probable, that the ſtructure of theſe two animals is the ſame, or rather that they are the ſame animals, and very different from the other ſeals, who have but one ſtomach, and feed upon fiſhes.

Woods Rogers had mentioned, before the author of Anſon's Voyage, theſe ſea-lions on the coaſts of South America, and deſcribes them a little differently: 'The ſea-lion,' he remarks, 'is a very ſtrange creature, and of a prodigious 'ſize. I have ſeen ſome of them above twenty 'feet long, and could not weigh leſs than four 'thouſand pounds. Others were ſixteen feet

'in length, and might weigh about two thou-
'ſand pounds. The quantity of oil they yield-
'ed was amazing. The figure of their body
'approaches to that of the ſea-calf; but their
'ſkin is thicker than that of an ox. The hair
'is ſhort and coarſe, the head diſproportionally
'large, and the mouth remarkably big: The
'eyes are of a monſtrous ſize. The muzzle re-
'ſembles that of a lion, with terrible whiſkers,
'the hairs of which are ſo ſtiff that they may
'ſerve for tooth-picks. About the end of the
'month of June, theſe animals repair to the
'iſland of Juan Fernandes, in order to produce
'their young, which they depoſit about a gun-
'ſhot from the margin of the ſea. There they
'remain till the end of September, without
'moving out of the place, and without taking
'any nouriſhment; at leaſt, we never ſaw them
'eat. I obſerved ſome of them continue eight
'days in the ſame ſpot, and would not have
'abandoned it, if we had not frighted them.
'. . . . At the iſland of Lobos, on the coaſt of
'Peru, we ſaw ſome ſea-lions, and a greater
'number of ſeals *.'

Theſe obſervations of Woods Rogers, which correſpond very well with thoſe of the author of Anſon's Voyage, ſeem ſtill farther to prove, that the ſea-lions feed upon herbage when they are on land; for it is by no means probable, that they paſs three months without taking any nouriſhment, eſpecially when ſuckling their young.

* Voyage round the World by Woods Rogers.

In the Collection of Voyages to the South Sea, there are many remarks concerning these animals: but neither the facts nor descriptions appear to be exact. For example, it is said, that, in Magellan's Straits *, there are sea-wolves so large, that their skin, when extended, was thirty-six feet wide; which is unquestionably an exaggeration. We are also told, that, in the two islands of Port Desire, these animals resemble lions in the anterior part of their body, having the head, neck, and shoulders garnished with a very long bushy mane †. This is still a greater exaggeration; for the sea-lions have only a little more hair on the neck than on the rest of the body; but this hair exceeds not an inch in length ‡. It is farther remarked, that some of these animals are more than eighteen feet long; that many of them are only fourteen feet; and that, generally, they exeed not five §. This account would lead us to believe that there are two species, the one much larger than the other; because the author does not inform us whether this difference was owing to the difference of their ages, which, however, was necessary to prevent error. 'These animals,' says Coreal ||, 'keep their mouths always open: Two men

* Navigation aux Terres Australes, tom. i. p. 168.
† Idem, tom. i. p. 221.
‡ Hist. du Paraguay, par le P. Charlevoix, tom. vi. p. 181.
§ Navigation aux Terres Australes, tom. ii. p. 11.
|| Voyage de Coreal, tom. ii. p. 180.

'are hardly able to kill one of them with a 'ſpear, which is the beſt weapon to uſe againſt 'them. The female ſuckles four or five young, 'and drives away any other young ones which 'approach her: From this circumſtance I con-'cluded that the females bring forth four or five 'at a litter.' This conjecture ſeems to be well founded; for the ſeal deſcribed by Mr. Parſons had four paps, ſituated in ſuch a manner as to form a ſquare, in the centre of which the navel is placed. I thought it proper to collect all the facts relative to theſe animals, which are very little known. It were to be wiſhed that ſome ſenſible traveller would furniſh us with a proper deſcription of them, and particularly of their internal parts, as the ſtomach, inteſtines, &c.; for, if the teſtimony of voyagers could be relied on, we ſhould believe that the ſea-lions belong to the claſs of ruminating animals; that they have ſeveral ſtomachs; and, conſequently, that their ſpecies is far removed from that of the ſeal, or ſea-calf, which certainly has but one ſtomach, and ought to be ranked with the carnivorous tribes.

The WALRUS *, MORSE, or SEA-COW.

THE denomination of *ſea-cow*, under which the walrus is moſt generally known, has been ill

* The arctic walrus, with two great tuſks in the upper jaw, pointed downwards; four grinders on both ſides, above and below;

ill applied*; for the animal it denotes has no reſemblance to a cow. The name *ſea-elephant*, which others have given it, is better imagined, becauſe it is founded on a conſpicuous character: The walrus, like the elephant, has two large ivory tuſks which proceed from the upper jaw; and its head, if it had a trunk, would have a great reſemblance to that of the elephant.

below; no cutting teeth; five palmated toes on each foot; a round head; ſmall mouth; very thick lips covered above and below with pellucid briſtles as thick as a ſtraw; ſmall fiery eyes; two ſmall orifices inſtead of ears; ſhort neck; body thick in the middle, tapering towards the tail; ſkin thick, wrinkled, with ſhort browniſh hairs thinly diſperſed; legs ſhort; five toes on each foot, all connected by webs, and ſmall nails on each; the hind-feet very broad; each leg looſely articulated; the hind-legs generally extend on a line with the body; tail very ſhort; penis long; the length, from noſe to tail, ſometimes eighteen feet, and ten or twelve round in the thickeſt part. The tuſks have been ſometimes found of the weight of twenty pounds each; *Pennant's Synopſ. of Quad. p.* 336.

Morſs, the Ruſſian name of this animal.

Walrus, morſe, Roſmarus; *Worm. Muſ. p.* 289. *Raii Synopſ. Quad. p.* 194. *Laët, p.* 41. *Johnſt. de Piſcibus, p.* 160. *tab.* 44.

Sea-horſe, or morſe; *Marten's Spitzberg. p.* 107. 182. *Egede's Greenland, p.* 82.

Sea-cow; *Crantz's Greenland, vol.* i. *p.* 125.

Odobenus. La vache marine; *Briſſon. Quad. p.* 30.

Trichecus roſmarus, dentibus laniariis ſuperioribus exſertis: *Linn. Syſt. Nat. p.* 49.

* The name *ſea-cow*, as well as *ſea-calf*, has perhaps been derived from this circumſtance, that the walrus and ſeal ſometimes cry like the lowing of a cow or calf: 'Ipſis,' ſays Pliny, ſpeaking of the ſeals, 'in ſomno mugitus, unde nomen vituli;' *lib.* ix. *cap.* 13.

The walrus not only wants this inſtrument, which ſerves the elephant for an arm and hand, but it has not the uſe of its arms and legs, which, as in the ſeals, are incloſed within the ſkin, the hands and feet being alone free. The body is long, ſwelled before, narrow behind, and every where covered with ſhort hair. The fingers of the hands and feet are enveloped in a membrane, and terminated by ſharp ſhort claws. Thick hairs, in the form of whiſkers, ſurround the mouth. The tongue is furrowed. The walrus has no external ears; ſo that, if we except the two large tuſks which change the form of the head, and the want of cutting teeth both above and below, it reſembles the ſeal in every other article: It is only much larger and ſtronger. The largeſt ſeals exceed not ſeven or eight feet. The walrus is generally twelve; and ſome of them are ſixteen feet long, and eight or nine in circumference. Both animals inhabit the ſame ſeas, and are almoſt always found together. They have many common habits: They live equally in water or on land: They both climb upon boards of ice: They ſuckle and manage their young in the ſame manner: They live on the ſame food, and equally aſſociate in large troops. But the ſpecies of the walrus is not ſo much diverſified as that of the ſeal. Neither does it ſtray to ſuch diſtances, but is more attached to its proper climate; for it is ſeldom ſeen any where

where but in the northern ſeas. Hence the ancients were acquainted with the ſeal, but had no knowledge of the walrus.

This animal is mentioned by moſt voyagers who have frequented the northern ſeas of Aſia *, Europe,

* We find the tuſks of the walrus in the environs of Nova Zembla, and in all the iſlands, as far as the Oby. They are are ſaid to be frequent about Jeniſki, and they were ſeen formerly as far as Pjaſida. We again meet with them at Schalaginſkoi, and among the Schuktſchii, where they are very large. . . . . It is probable that theſe animals are numerous from this place to the river Anadir; for all the tuſks ſold at Jakutzk are brought from Anadirſkoi. The tuſks of the walrus are likewiſe found in Hudſon's ſtraits, where they are a Ruſſian ell in length, and as thick as a man's arm. Their ivory is equally good with that of the elephant's tuſks; *Voyage du Nord, tom.* vi. *p.* 7.——At Jakutzk, I ſaw ſome teeth of the walrus which were a Ruſſian ell and a quarter, and others an ell and a half in length. They are commonly broader than thick, and are about four inches wide at the baſe. . . I never heard that, in the neighbourhood of Anadirſkoi, the walrus was hunted or fiſhed to procure its teeth. On the contrary, I was aſſured, that the inhabitants found theſe teeth on the low ſhores, detached from the animal; and, conſequently, that there was no occaſion for killing the creatures. . . . I have frequently been aſked, whether the walrus of Anadirſkoi was a different ſpecies from that found in the weſt paſſage of the frozen ſea, becauſe the teeth brought from the eaſt coaſt are much larger than thoſe which come from the weſt. . . It appears that the walrus of Greenland, and that on the weſt of the frozen ſea, have no communication with thoſe found on the eaſt of Kolima, about the point of Schalaginſkoi, and ſtill farther, near Anadirſkoi. Neither do thoſe of Hudſon's Bay ſeem to join thoſe of Tſchuktſchi. . . It is univerſally agreed, however, that the walrus of Anadirſkoi differs neither in ſize nor figure from that of Greenland, &c.; *Voyage de Gmelin en Siberie, tom.* iii. *p.* 148.——*Note*, M. Gmelin has not reſolved this queſtion,

Europe, and America *. But as Zorgdrager appears to ſpeak of it with greater intelligence than any other author, I ſhall here give a tranſlation of what he has ſaid on this ſubject, which was communicated to me by the Marquis de Montmirail †.

'In Horiſont and Klock bays, the walrus and 'ſeals were formerly very numerous; but few 'of them now remain. . . . During the heat 'of ſummer, both of them reſort to the neigh-'bouring plains, and are ſometimes ſeen in 'troops of one or two hundred, particularly 'the walrus, who can continue there for ſeveral 'days running, till hunger forces him back to 'the ſea. Theſe animals have a great reſem-'blance to the ſeal; but they are ſtronger and 'larger. Like the ſeal, they have five toes; but

though I think it may be anſwered in a ſatisfactory manner. He remarks, that theſe animals are neither hunted at Anadirſkoi, nor on the eaſtern part of the frozen ſea; and, conſequently, no teeth are brought thither but thoſe of the creatures who die a natural death. Of courſe, it is not ſurpriſing, that teeth, which have acquired their full growth, ſhould be larger than thoſe of the Greenland walrus, which is often killed when young.

* On the coaſts of North America, we ſaw ſea-cows, called alſo *beaſts with the large teeth*; becauſe they have large tuſks, as long as the half of a man's arm. . . No ivory can be finer; and they are found on Sable iſland: *Deſcript. de l'Amerique Septent. par Denis, tom.* ii. *p.* 257.

† Deſcript. de la Priſe de la Baleine, et de la Pêche du Greenland, &c. par Corneille Zorgdrager.

'their

'their claws are ſhorter, and their head thicker, 'rounder, and ſtronger. The ſkin of the wal- 'rus, eſpecially about the neck, is an inch thick, 'wrinkled, and covered with very ſhort hair 'of various colours. His upper jaw is armed 'with two tuſks of half an ell, or an ell in 'length, which are hollow at the root, and 'grow larger as the animal advances in years. 'The walrus is ſometimes obſerved to have but 'one tuſk, having loſt the other by fighting, or 'by age. This ivory is generally clearer than 'that of the elephant; becauſe it is harder and 'more compact. The mouth of the walrus re- 'ſembles that of an ox, and is garniſhed above 'and below with hollow pointed hairs, about 'the thickneſs of a ſtraw. Above the mouth 'are two noſtrils, through which theſe animals 'blow the water, like the whale, without, how- 'ever, making much noiſe. Their eyes are ſpark- 'ling, red, and inflamed during the heat of ſum- 'mer; and, as they cannot then endure the im- 'preſſion made by the ſalt water on their eyes, 'they continue more willingly on the land in 'ſummer than in any other ſeaſon. . . . . 'They are very numerous about Spitzbergen. . . 'They are killed on land with lances. . . They 'are hunted on account of the profit derived 'from their teeth and greaſe. Their oil is near- 'ly as much eſteemed as that of the whale. 'Their teeth are of more value than the whole 'oil they yield. The internal part of the teeth,

'especially when large, the substance of which 'is harder and more compact than that of the 'smaller ones, is more precious than ivory. 'When a pound of the smaller kind is sold for 'a florin, a pound of the large brings three, 'four, and often five florins. A middle sized 'tooth weighs three pounds .... and an 'ordinary walrus furnishes half a ton of oil. 'Hence the whole animal brings thirty-six 'florins, eighteen for the two teeth, and as 'much for the oil. .... Formerly, vast troops 'of these animals were found on land. But 'our vessels, which go annually to the whale 'fishery, have so terrified them, that they have 'retired to the most sequestered places; and 'those who remain never venture upon land in 'troops, but continue in the water, or dispersed 'among the boards of ice*. When a walrus 'is met with upon the ice, or in the water, a

* The number of these animals must be greatly reduced, or rather, most of them have retired to unknown coasts; for we find, in the Collection of Voyages to the North, that, in the year 1704, near Cherry Island, in the latitude of 65 degrees 45 minutes, the crew of an English vessel fell in with a prodigious number of these creatures, all lying near each other; that out of more than a thousand, of which this troop consisted, the sailors killed only fifteen; but that they found as many teeth as filled a ton—that, on the 13th of July, they killed a hundred more, of which they carried off only the teeth——that, in 1706, another English crew killed seven or eight hundred in six hours; in 1708, more than nine hundred in seven hours; in 1710, eight hundred in a few days; and that a single man slew forty with a spear.

'strong

'ſtrong harpoon is darted at him, which not 'unfrequently ſlips upon the thick, hard, ſkin. 'But, when pierced, the animal is dragged with 'a cable toward the helm of the boat, is ſlain 'with a ſtrong ſpear made for the purpoſe, and 'afterwards brought to the neareſt ſhore, or to 'a flat board of ice. He is generally heavier 'than an ox. The fiſhers begin with taking off 'his ſkin, which being of no value, is thrown 'away *. With a hatchet, they ſeparate the 'two teeth from the head; or, to prevent the 'teeth from damage, they cut off the head, and 'boil it in a cauldron. The blubber is afterwards 'cut into long ſlices, and carried to the ſhip. . . 'It is equally difficult to follow the walrus by 'rowing as the whale, and the harpoon is often 'darted in vain; becauſe the whale is more 'eaſily pierced, and the harpoon does not ſlip 'ſo readily. . . The walrus is often ſtruck three 'times, with a ſtrong ſharp ſpear, before his 'hard thick ſkin is pierced. It is neceſſary, 'therefore, to ſtrike him in a place where the 'ſkin is well ſtretched. For this reaſon, the 'fiſhers aim at the eyes of the animal, which 'obliges it to turn its head, and ſtretch the

* Zorgdrager ſeems to have been ignorant that a very good leather is made of this ſkin. I have ſeen ſtrong coach braces made of it. Anderſon, after Other, ſays, that girths, and ropes for boats, are alſo made of this ſkin; *Hiſt. of Greenland, tom.* ii. *p.* 160.

'ſkin

'skin of the throat or breast. Then the blow 'is given in this place, and the spear is quickly 'retracted, to prevent the creature from seizing 'it with his teeth, and wounding his assailant, 'either with his teeth, or even with the spear, 'which sometimes happens. The attack upon 'a small board of ice never lasts long; because 'the walrus, whether wounded or not, throws 'himself quickly into the water; and, there-'fore, attacking him upon land, is always prefer-'red. . . . . These animals are found in unfre-'quented places only, as in the island of Moffen, 'behind Worland, in the land surrounding 'Horisont and Klock bays, in retired plains, 'and banks of sand, where vessels rarely ap-'proach. Even those which are there met 'with, instructed by the persecutions they have 'suffered, are so much on their guard, that they 'keep always near the water, to facilitate their 'retreat. This fact I experienced on the large 'bank of sand behind Worland, called *Rif*, 'where I fell in with a troop of thirty or forty. 'Some of them were on the very margin of 'the water, and others at no great distance from 'it. We stopped some hours, without landing, 'in hopes that they would advance farther into 'the plain. But, as this stratagem did not suc-'ceed, we landed with two boats to the right 'and left of them. Almost the whole of 'them were in the water the moment we put

'our

'our feet on the land; so that our hunting was 'confined to the wounding of a few, which 'likewise instantly darted into the sea. . . . . 'Before being persecuted, these animals ad- 'vanced far upon land; so that, in high tides, 'they were at a great distance from the water; 'and, when the tide ebbed, the distance being 'increased, they were easily assailed. . . . . We 'marched in front of these animals to cut off 'their retreat from the sea. They saw all these 'preparations without betraying any symptoms 'of fear; and each hunter often killed one of 'them, before it could regain the water. We 'made a barrier of the dead carcases, and left 'some of our men in ambush to slay those 'which remained. We sometimes killed three 'or four hundred. . . . . From the prodigious 'quantity of teeth scattered over the ground, 'it is obvious that these animals must have for- 'merly been very numerous. . . . When 'wounded, they become furious, striking from 'one side to the other with their teeth. They 'break the arms, or drive them out of the 'hands of their assailants; and, at last, burning 'with rage, they place their head between their 'paws, or fins, and allow themselves to tumble 'into the sea. . . . When very numerous, they 'grow so audacious, that, in order to secure 'one another, they surround the boats, and 'endeavour to overset them, by striking or

'piercing

'piercing the planks with their teeth. . . . In 'fine, this elephant of the ſea, before he be- 'came acquainted with men, was afraid of 'no enemy; becauſe he had learned to con- 'quer the rapacious Greenland bear, which 'may be ranked among the number of ſea- 'robbers.'

By adding to Zorgdrager's remarks thoſe which are to be found in the Collection of Voyages to the North *, and others that are ſcattered

* The ſea-horſe *(walrus)* reſembles the ſea-calf *(ſeal)*, except that he is much larger; for he is of the ſize of an ox. His paws, both before and behind, like thoſe of the ſea-calf, have five toes; but the claws are ſhorter. His head is likewiſe larger, rounder, and harder, than that of the ſea-calf. His ſkin, eſpecially about the neck, is fully an inch thick. Some of them are covered with mouſe-coloured hair, and others have very little hair. They are generally ſo infeſted with ſcabs and excoriations, that one ſhould imagine they had been flayed, eſpecially about the joints, where the ſkin is much wrinkled. In the upper jaw they have two large tuſks, which ſometimes exceed two feet in length. The young ones have no tuſks; but they grow as the animals advance in years. . . . Theſe tuſks are more eſteemed than the fineſt ivory; they are ſolid within, except near the roots. . . The opening of their mouth is as large as that of an ox; and, both above and below the lips, there are ſeveral briſtles, which are hollow within, and as thick as a ſtraw. . . Above the whiſkers, there are ſemicircular noſtrils, through which they throw out water, like the whales, but with much leſs noiſe. Their eyes are ſituated high above the noſe, and they are as red as blood. Their ears are not far from their eyes, and reſemble thoſe of the ſeal. Their tongue is at leaſt as large as that of an ox.—Their neck is ſo thick, that it is with difficulty they can turn their head, which obliges them to move their eyes almoſt continually. Their tail is ſhort, like that of the ſeal. Their greaſe is not ſo eaſily removed as in the

tered in different relations, we ſhall have a pretty complete hiſtory of this animal. The ſpecies ſeems to have formerly been much more diffuſed than at preſent. They were found in the ſeas of the temperate zones, in the gulf of Canada *, upon the coaſts of Acadia, &c. But they are

the ſeals, becauſe it is interlarded with fleſh.——Their penis conſiſts of a hard bone, about two feet long, which tapers toward the point, and is a little bended in the middle. Very near the belly, the penis is flat; but, beyond that, it is round, and covered with ſinews.——Theſe animals, it is probable, live upon herbs and fiſhes: Their dung reſembles that of a horſe.——When they dive, like the ſeals, they plunge their head firſt into the water. They ſleep and ſnore, not only on the ice, but in the water; ſo that they frequently have the appearance of being dead. They are bold and furious, and defend each other to the laſt drop of their blood.——They exert every effort to relieve thoſe which are taken. They aſſault the boat on all ſides, biting and bellowing in a hideous manner; and if, by means of their number, they oblige the enemy to fly, they purſue the boat till they loſe ſight of it.——They are hunted ſolely for the ſake of their teeth; but, out of a hundred, perhaps not above one tooth is found to be good; becauſe ſome of them are too young, and others have ſpoiled teeth; *Recueil des Voyages du Nord, tom.* ii. *p.* 117.

* In the latitude of 49 degrees 40 minutes, there are three ſmall iſlands in the gulf of St. Lawrence, upon one of which vaſt numbers of a certain ſpecies of ſeal come aſhore. This animal, which, I believe, was unknown to the ancients, is called *walrus* by the Flemyngs, and *morſe* by the Engliſh, who have adopted its Ruſſian name. It is an amphibious and a monſtrous creature, and ſometimes ſurpaſſes the Flanders oxen in thickneſs. Its hair reſembles that of the ſeal.——It has two tuſks bended downward, which are a cubit in length, and uſed for the ſame purpoſes as ivory, and bring an equal price; *Deſcript. des Indes Occidentales, par de Laët, p.* 41.

—Upon the coaſts of North America, there are ſea-cows, otherwiſe called *beaſts with the long teeth*; becauſe they have two large

are now confined to the ſeas of the frozen zones, and, even there, they are very ſcarce in places which are much frequented. There are few of them in the frozen ſeas of Europe, and ſtill fewer in thoſe of Greenland, Davis's Straits, and other parts of North America; becauſe, on account of the whale fiſhery, they have been long diſturbed and hunted. From the end of the ſixteenth century, the inhabitants of St. Malo went to the Ramée iſlands in queſt of the walruſes, which were then very numerous *. It is not a hundred years ſince the merchants of Port-Royal in Canada ſent barks to Cape Sable and Cape Fourchu to hunt theſe animals †, which have ſome time ago forſaken theſe latitudes, as well as thoſe of the European ſeas; for they are now found in conſiderable numbers only in the frozen ſea of Aſia, from the mouth of the Oby to the moſt eaſtern point of that Continent, the coaſts of which are very little frequented. They are rarely ſeen in the temperate ſeas. The ſpecies found under the Torrid Zone, and in the Indian ocean, is very different from our northern walrus. The latter

large tuſks, about a cubit in length, and their other teeth are four inches long. No ivory can be finer. Theſe animals are found on Sable iſland; *Deſcript. de l'Amerique Septent. par Denis, tom.* ii. *p.* 257.

* Deſcript. des Indes Occidentales, par de Laët, p. 42.

† Deſcript. de l'Amerique Septent. par Denis, tom. i. p. 66.

ſeem

ſeem to dread either the heat or the ſaltneſs of ſouthern ſeas; and, as they have never traverſed theſe ſeas, they are not found toward the South pole, though we ſee there the large and ſmall ſeals of the North, which are even more numerous than in our Arctic regions.

The walrus, however, can live at leaſt ſome time in a temperate climate. Edward Worſt tells us, that he ſaw one of theſe animals alive in England, which was three months old; that it was put into water, for a ſhort time only, each day; and that it crawled upon the ground. He does not ſay that it was incommoded by the heat of the air, but, on the contrary, that, when touched, it had the aſpect of a furious and robuſt animal, and that it reſpired ſtrongly through the noſe This young walrus was of the ſize of a calf, and had a great reſemblance to the ſeal. Its head was round, its eyes large, and its noſtrils flat and black, which it opened and ſhut at pleaſure. It had no ears, but only two auditory paſſages. The opening of the mouth was not large; and the upper jaw was garniſhed with wiſkers conſiſting of coarſe, thick, cartilaginous hairs. The under jaw was triangular, the tongue thick and ſhort, and the inſide of the mouth fortified on each ſide with flat teeth. Both the fore and hind-feet were broad, and the hind-part of the body was perfectly ſimilar to that of the ſeal. This hind part crawled, rather than walked. The fore-feet turned

forward, and thoſe behind backward. They were all divided into five toes, covered with a ſtrong membrane. . . . . The ſkin was thick, hard, and covered with ſhort delicate hair, of an aſh-colour. This animal grunted like a wild boar, and ſometimes cried with a ſtrong, deep voice. It was brought from Nova Zembla, and had not yet acquired the two tuſks; but, on the upper jaw, the knobs from which they were to ſpring were viſible. It was fed with boiled oats or millet, which it rather ſlowly ſucked than eat. It ſprung with fury at its maſter, and made a growling noiſe. It followed him, however, when he preſented it with victuals *.

This account, which gives a tolerably juſt idea of the walrus, ſhews, at the ſame time, that it can live in a temperate climate. Nevertheleſs, it does not appear that it could endure great heat, or has ever frequented the ſouthern ſeas, ſo as to paſs from the one pole to the other. Several voyagers mention ſea-cows which they have ſeen in India; but theſe belong to a different ſpecies: That of the walrus is always eaſily diſtinguiſhed by its long tuſks, which no other animal has, except the elephant. This production is an effect rarely exhibited in Nature; for, of all the terreſtrial and amphibious animals, the elephant and walrus, in which alone it appears, are ſolitary

* Deſcript. des Indes Occidentales, par de Laët, p. 41.

ſpecies,

ſpecies, and conſtitute diſtinct and undivided genera.

We are aſſured that the walruſes couple not in the manner of quadrupeds, but backward. The male, like the whales, has a large bone in the penis. The females bring forth in winter upon the land, or upon boards of ice, and generally produce but one young at a time, which, when born, is as large as a hog of a year old. We are ignorant of the period of geſtation; but, to judge of it from that of the growth, as well as the magnitude of the animal, it ought to be more than nine months. The walruſes cannot remain always in the water, but are obliged to come upon land, either to ſuckle their young, or for other purpoſes. When under the neceſſity of climbing ſteep ſhores, or boards of ice, they uſe their teeth * and hands as hooks to drag along the unweildy maſſes of their bodies. It is alleged, that they feed upon ſhell fiſhes, which adhere to the bottom of the ſea; and that they uſe their tuſks to diſengage them †. Others affirm ‡, that they live upon a certain ſea-herb with broad leaves, and that they nei-

* Theſe teeth are not entirely round and ſmooth, but rather flat and ſlightly furrowed. The right tooth is commonly ſomewhat longer and ſtronger than the left.——I have had two of them, each of which was two feet and an inch long, and eight inches in circumference at the baſe; *Anderſon's Nat. Hiſt. of Greenland.*

† Nat. Hiſt. of Greenland, p. 162.

‡ Deſcript. des Indes Occidentales, par de Laët, p. 42.

ther eat fleſh nor fiſh. But I believe none of theſe aſſertions to be true. The walrus, it is probable, lives upon prey, like the ſeal, and particularly on herrings and ſmall fiſhes; for he eats none upon land, which obliges him to return to the ſea in queſt of food.

The INDIAN WALRUS, or DUGON*.

THE dugon is an animal of the African and Eaſt Indian ſeas. We have ſeen two heads of it, which had a greater reſemblance to the head of the walrus than to that of any other animal. Its head is deformed nearly in the ſame manner by the depth of the ſockets from which the two tuſks in the upper jaw ſpring. They are half a foot long, and are rather large cutting teeth than tuſks. They extend not directly

* Indian walrus, with two ſhort canine teeth, or tuſks placed in the upper jaw, pretty cloſe to each other. In the upper jaw are four grinders on each ſide; in the lower, three on each ſide; *Pennant's Synopſ. of Quad. p.* 338.

Dugon, or *dugung*, the name of this animal in the iſle of Lethy or Leyte, one of the Philippine iſlands, where, according to Chriſt. Barchewick, it is alſo called *ikan* and *manate*. This laſt denomination would indicate that the *dugung* is a *manati* or *lamentin*. But this author, in his deſcription, tells us, that the dugung has two tuſks of an inch thick, and a ſpan long. This character cannot apply to the manati, but agrees very well with the animal under conſideration, of which we have a head.

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out of the mouth, like thoſe of the walrus; but are much ſhorter and more ſlender. Beſides, they are ſituated in the fore part of the jaw, and very near each other, like cutting teeth. But between the tuſks of the walrus, there is a conſiderable interval; and they are not ſituated at the point, but at the ſide of the upper jaw. The grinders of the dugon differ likewiſe in number, poſition, and figure, from thoſe of the walrus. From all which we muſt conclude, that the dugon is a diſtinct ſpecies. Several voyagers have confounded it with the ſea-lion. Innigo de Biervillas ſays, that a ſea-lion was killed at the Cape of Good Hope, which was ten feet long, and four thick. Its head reſembled that of a calf of one year old. It eyes were hideous, and its ears ſhort; and it had a briſtly beard, broad feet, and legs ſo ſhort, that its belly touched the ground. He adds, that it had two tuſks which iſſued half a foot out of the mouth *. This laſt character correſponds not with the ſea-lion, which has no tuſks, but teeth like thoſe of the ſeal. From this circumſtance I concluded, that it was not a ſea-lion, but the animal to which we have given the name of *dugon*. Other travellers ſeem to have pointed it out under the denomination of the *ſea-bear*. Spilberg and Mandelſlo relate, 'that, 'at the iſland of St. Eliſabeth, on the African 'coaſt, there are animals which ſhould rather

* Voyage d'Innigo Biervillas, part i. p. 38.

'be called *sea-bears*, than sea-wolves; because, 'by their hair, their colour, and their head, 'they have a greater resemblance to the bear, 'only the muzzle is sharper; that they resem- 'ble the bear still more in their manner of 'moving, except in the movement of the hind- 'legs, which are only trailed; that these am- 'phibious creatures have a terrible aspect, fly 'not from man, and bite with such force as to 'break the shaft of a javelin; and that, though 'denied the use of their hind-legs, they fail not 'to run with such swiftness that it is difficult 'for a man to overtake them*.' Guat tells us, 'That he saw, at the Cape of Good Hope, 'a sea-cow of a reddish colour. It had a thick 'round body, large eyes, long tusks, and a 'muzzle a little turned up. He adds, that he 'was assured by a mariner, that this animal, 'of which we could see the fore-part only, as 'it was in the water, had feet †.' This sea-cow of Guat, the sea-bear of Spilberg, and the sea-lion of Biervillas, appear to be the same animal with the dugon, whose head was sent to us from the isle of France, and which, consequently, exists in the southern seas, from the Cape of Good Hope to the Philippine islands ‡.

Besides,

* Premier Voyage de Spilberg, tom. ii. p. 437. Voyages de Mandelslo, tom. ii. p. 551.

† Voyage de le Guat, tom. i. p. 36.

‡ I could see from my house, which was situated on a rock in the island of Lethy, the turtles at some fathoms deep in the water.

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Beſides, we cannot be certain that this animal, which has ſome reſemblance to the walrus in the head and tuſks, has four feet. We only preſume from analogy, and the teſtimony of travellers, that it has theſe members. But, as the analogy is not very great, and the teſtimony of travellers not ſufficiently explicit, we ſhall ſuſpend our judgment on this ſubject, till we receive better information.

I one day ſaw two large *dugungs*, or *ſea-cows*, which approached near the rock. I inſtantly informed my fiſher, to whom I ſhowed the two animals, which were moving about and eating a green moſs that grows on the ſhore. He ran for his companions, who ſoon brought a boat to the place. During this time, the male came in queſt of the female, and, being unwilling to leave her, allowed himſelf to be ſlain alſo. Each of theſe prodigious fiſhes was more than ſix ells long. The male was a little larger than the female. Their heads reſembled that of an ox. *They had two large teeth, a ſpan in length and an inch thick*, which protruded out of the jaw, like thoſe of the wild bear. Theſe teeth were as white as the fineſt ivory. The female had two breaſts, like a woman; and the male organs of generation reſembled thoſe of a man. The inteſtines were like thoſe of a cow, and the fleſh had nearly the ſame taſte; *Voyage de Chriſtopher Barchewitz, p.* 381. *Note*, This deſcription correſponds very well with that of the manati, except the teeth. The manati has neither tuſks nor cutting teeth; for which reaſon I conjecture that this dugung was not the manati, but the animal under conſideration.

THE MANATI*.

IN the animal kingdom, the terreſtrial tribes commence where the fiſhes terminate. The manati,

* The manati has pinniform fore-legs; hind-parts ending in a tail, horizontally flat. Theſe animals are of an enormous ſize; ſome of them are twenty-eight feet long, and eight thouſand pounds in weight. The head, in proportion to the bulk of the animal, is ſmall, oblong, and almoſt ſquare. The noſtrils are filled with ſhort briſtles. The gape, or *rictus*, is ſmall. The lips are double. Near the junction of the two jaws, the mouth is full of white tubular briſtles, which ſerve the ſame uſe as the laminæ of whales, to prevent the food from running out with the water. The lips are alſo full of briſtles, which ſerve inſtead of teeth to cut the ſtrong roots of the ſea plants, which, floating aſhore, are a ſign of the vicinity of theſe animals. In the mouth are no teeth, only two flat white bones, one in each jaw, one above, another below, with undulated ſurfaces, which ſerve inſtead of grinders. The eyes are extremely ſmall, not larger than thoſe of a ſheep. The iris is black. It is deſtitute of ears, having only two orifices, ſo ſmall that a quill will ſcarce enter them. The tongue is pointed, and but ſmall. The neck is thick, and its junction with the head ſcarce diſtinguiſhable; and the laſt always hangs down. The circumference of the body near the ſhoulders is twelve feet, about the belly twenty, near the tail only four feet eight; the head thirty-one inches; the neck near ſeven feet: And, from theſe meaſurements, may be collected the deformity of this animal. Near the ſhoulders are two feet, or rather fins, which are only two feet two inches long, and have neither fingers nor nails; beneath they are concave, and covered with hard briſtles. The tail is thick, ſtrong, and horizontal, ending in a ſtiff black fin, and like the ſubſtance

manati, which is neither a quadruped nor a whale, retains the two fore-feet, or rather hands, of the former. But the hind-legs, which, in the ſeal and walrus, are almoſt entirely included within the body, and very much contracted, are

ſubſtance of whalebone, and much ſplit in the fore-part; the end ſlightly divided.

The ſkin is very thick, black, and full of inequalities, like the bark of oak, and ſo hard as ſcarce to be cut with an ax, and has no hair on it. Beneath the ſkin, is a thick blubber, which taſtes like oil of almonds. The fleſh is coarſer than beef, and will not ſoon putrify. The young ones taſte like veal. The ſkin is uſed for ſhoes, and for covering the ſides of boats; *Pennant's Synopſ. of Quad. p.* 355.

Manati; *Hernand. Mex. p.* 323. *De Laët, p.* 6.

Manatus; *Rondeletius, p.* 490. *Geſner. Piſc. p.* 213. *Cluſ. Exot. p.* 132. *Raii Synopſ. Quad. p.* 193. *Klein. Quad. p.* 84. *Steller Nov. Com. Petrop. tom.* ii. *p.* 294.

Le lamantin; *Briſſon. Quad. p.* 164.

Trichechus; *Arted. Gen.* 79. *Syn.* 109.

Trichechus manatus, dentibus laniariis incluſis; *Linn. Syſt. Nat. p.* 49.

It is alleged that the name *lamantin* was applied to this animal, on account of its lamentable cries; which is entirely fabulous. This word is a corruption of the name given to the animal in the language of the Galibis, who inhabit Guiana, and of the Caribs, who live in the Antilles; for they are the ſame race of people, and have nearly the ſame language. They call the lamantin *manati*, for which the negroes of the French iſlands, who corrupt words of every kind, by adding the article, made it *lamanati*. From *lamanati* they ſtill farther corrupted it into *lamannati*, and *lamenti*. After which it was ſuppoſed to be derived from *lamentari*, on account of the ſuppoſed lamentations of the female when deprived of her young; *Lettre de M. de le Condamine à M. de Buffon, du* 28 *Mai* 1764. It ought, however, to be remarked, that *manati* is a Spaniſh word, which, according to ſeveral authors, denotes an animal with hands.

totally

totally obliterated in the manati. Inſtead of two ſhort feet, and a ſtill ſhorter tail, which the walrus carries in a horizontal direction, the manati has only a large tail, which ſpreads out like a fan, in the ſame direction; ſo that, at firſt ſight, the tail of the former ſeems to be divided into three, and that, in the latter, theſe three parts appear to be united into one. But, from a more attentive obſervation, and particularly from diſſection, it appears, that no ſuch union takes place; that there is not a veſtige of thigh-bones and legs; and that the bones which compoſe the tail of the manati are ſimple vertebræ, ſimilar to thoſe of the cetaceous animals, who have no feet. Hence thoſe animals are cetaceous by the hind-part of their bodies, and are only allied to the quadrupeds by the two fore-feet or hands on each ſide of the breaſt. Oviedo ſeems to be the firſt author who has given a kind of hiſtory and deſcription of the manati: 'This animal,' he remarks, 'is pretty frequent 'on the coaſts of St. Domingo. He is very 'large, and of a deformed figure, with a head 'thicker than that of an ox, ſmall eyes, and two 'feet or hands near the head, which ſerve him 'for ſwimming. He has no ſcales, but is co-'vered with a very thick ſkin. He is a very 'gentle creature. He riſes on the waves, and 'eats ſuch herbage on the ſhore, as he can reach 'without coming out of the water. He gene-

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'rally ſwims on the ſurface. In order to ſeize 'him, the people endeavour to approach him 'with a boat, and then dart at him a large ar- 'row, fixed to a very long rope. As ſoon as 'he feels himſelf wounded, he runs off with the 'arrow and rope, to the extremity of which a 'large piece of cork or wood is tied, to ſerve as 'a buoy, that they may diſcover his route. 'When the animal is exhauſted by the wound 'and loſs of blood, he approaches the land. 'They then lay hold of the end of the rope, and 'coil it up, till a few fathoms only remain. By 'the aid of the waves, he is gradually brought 'to land, or he is killed in the water with 'ſpears. His weight is ſo great, that a carriage 'drawn with two oxen is neceſſary to tranſport 'him. His fleſh is excellent, and, when freſh, 'is preferred to beef or fiſh. When cut into 'pieces and pickled, it in time acquires the taſte 'of the tunny fiſh, and, in this ſtate, it is moſt 'highly reliſhed. Some of theſe animals are 'more than fifteen feet long, by ſix in thickneſs. 'The hind-part of the body is much thinner, 'and tapers toward the tail, which again ſpreads 'out at the extremity. As the Spaniards call 'the fore-feet of all quadrupeds *hands*, and as 'this animal has only two fore-feet, they have 'denominated it the *manati*, or the *animal with* '*hands*. He has no external ears, but two aper- 'tures only, through which he hears. On his 'ſkin there are only a few ſcattered hairs; it is

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'of an aſh-colour, and an inch thick. Soles of 'ſhoes, belts, &c. are made of it. The female 'has two paps on her breaſt, and generally brings 'forth two young, which ſhe ſuckles *.' All theſe facts related by Oviedo are true; and it is ſingular, that Cieça †, and ſeveral ſubſequent writers, ſhould affirm, that the manati comes often out of the water to paſture on the land. They have been led into this notion from the analogy of the walrus and ſeals, which frequently quit the water, and continue for ſome time on the land. But it is certain that the manati never leaves the water, and that he prefers freſh water to ſalt.

Cluſius meaſured the ſkin of one of theſe animals, and found it to be ſixteen feet and a half long, and ſeven feet and a half broad; the two feet or hands were large, and armed with ſhort claws. Gomara ‡ aſſures us, that he ſometimes found them of twenty feet in length: and adds, that they frequent the rivers as well as the ſea. He relates, that a young manati was reared in a lake in the iſland of St. Domingo during twenty-ſix years; that he was ſo gentle and tame, that he took peaceably the food which was preſented to him; that he knew his name, and, when called upon, came out of the water, and crawled to the houſe to receive his

* Ferdin. Oviedo, Hiſt. Ind. Occid. lib. xiii. cap. x.
† Chron. Peruv. cap. xxxi.
‡ Fr. Lopes de Gomara, Hiſt. Gen. cap. li.

victuals;

victuals; that he seemed to be pleased with the human voice, and the chanting of children; that he had no fear; that he allowed the boys to sit on his back, and carried them from one end of the lake to the other, without plunging them into the water, or doing them any injury. This relation cannot be true in all its circumstances: It seems to be accommodated to the fable of the ancients concerning the dolphin; for the manati is unable to crawl on the ground.

Herrera says very little on this subject: He only assures us, that, though very large, the manati swims easily, makes no noise in the water, and dives when he hears any distant sound *.

Hernandes, who gives two figures of the manati, the one in profile and the other in front, hardly adds any thing to what had been said by former Spanish authors. He only remarks, that both the Atlantic and Pacific oceans, as well as the lakes, produce a deformed animal, called *manati*, the description of which he copies almost entirely from Oviedo; and then adds, that the hands of this animal have five nails, like those of man; that it has a large navel and anus; that the vulva resembles that of a woman; that the penis is like that of a horse; that the flesh and grease are similar to those of a fat hog; that the ribs and viscera resemble those of a bull; that they couple on land, the female lying on her back; and that they produce but one young,

* Descript. des Indes Occident. par Herrera, p. 57.

which

which is of a monſtrous ſize the moment it is brought forth *. The copulation of theſe animals cannot take place on land, becauſe they are unable to walk; but it is performed in ſhallow water. Binet † remarks, that the manati is of the ſize of an ox, and as round as a ton; that he has a ſmall head, and very ſmall tail; that his ſkin is as coarſe and thick as that of the elephant; that ſome of them are ſo large as to yield more than ſix hundred pounds of excellent meat; that his greaſe is as mild as butter; that he delights in the mouths of rivers, where he browſes the herbs which grow on the banks; that, in certain places, about ten or twelve leagues from Cayenne, they are ſo numerous, that a veſſel may be filled with them in one day, by expert harpooners. Father Tertre, who gives a long account of the fiſhing of the manati, agrees almoſt in every article with the authors we have quoted. He remarks, however, that this animal has only four toes and four claws on each hand; and adds, that he feeds upon a ſmall ſea herb, which he browſes in the ſame manner as an ox; and that, after being ſatiated with his food, he ſearches for the rivers and freſh waters, where he browſes twice a-day; that, when his belly is full, he ſleeps with his muzzle half out of the water, which makes him obſervable at a diſtance; that the female brings

* Hernand. Hiſt. Mex. p. 324.

† Voyage en l'Iſle de Cayenne, par Antoine Binet, p. 346.

forth two young, which follow her every where; and that, when the mother is taken, we are certain likewiſe of having the young, who never depart from her, even when dead, but go perpetually round the veſſel which carries her *. This laſt fact appears to be very ſuſpicious: It is contradicted by other voyagers, who aſſure us that the manati produces but one at a time. As all large quadrupeds, and the whale tribes, produce one young only, analogy alone ſhould prevent us from believing that the manati always brings forth two. Oexmelin remarks, that the tail of the manati is placed horizontally, like that of the cetaceous animals, and not vertically, like that of other fiſhes; that it has no fore-teeth, but only a kind of calloſity as hard as a bone, with which it cuts the herbage; that it has thirty-two grinders; that it does not ſee well, on account of the ſmallneſs of its eyes, which ſecrete very little humour, and have no iris; that its brain is ſmall; that, to ſupply the defect of good eyes, it has an excellent ear; that it has no tongue; that the organs of generation reſemble thoſe of man and woman more than any other animal; that the milk of the females, which he had taſted, is very good; that they produce but a ſingle young one, which they embrace and carry with their hands; that the mother ſuckles it during a whole year, after which it is in a condition to eat herbage, and provide

* Hiſt Gen. des Antilles, par le P. du Tertre.

for

for its own ſafety; that from the neck to the tail, this animal has fifty-two vertebræ; that it feeds like the turtle, but can neither walk nor crawl on the ground *. All theſe facts are pretty exact, and even that of the fifty-two vertebræ; for M. Daubenton, in the fœtus which he diſſected, found twenty-eight vertebræ in the tail, ſixteen in the back, and ſix, or rather ſeven, in the neck. This voyager is only deceived with regard to the tongue, which is not wanting in the manati. It is indeed fixed, almoſt to its extremity, to the under jaw. In the voyage to the American iſlands, we find a very good deſcription of the manati, and the manner in which it is harpooned. The principal facts, mentioned by this author, correſpond with thoſe already quoted: But he remarks, 'That, ſince the coaſts 'have been inhabited, this animal has become 'exceedingly rare in the Antilles; and that the 'one he ſaw and meaſured was fourteen feet 'nine inches from the muzzle to the origin of 'the tail. The whole body was round. The 'head was thick, and the mouth large, with 'great lips, and ſome long coarſe hairs about 'them. The eyes were very ſmall in proportion to the head; and the ears were only two 'ſmall apertures. The neck is very thick and 'ſhort; and, were it not for a ſmall movement 'which makes it wrinkle, it would be impoſſible 'to diſtinguiſh the head from the body. Some

* Hiſt. des Avanturiers par Oexmelin, tom. xii. p. 134.

'authors

'authors pretend,' he adds, 'that this animal 'uſes its two hands or fins for dragging itſelf 'along the ground. I made a particular inquiry 'concerning this fact. But no perſon had ever 'ſeen the animal on land; and it is impoſſible 'that it ſhould either walk or crawl, the fore-'feet, or hands, ſerving only to hold its young 'when ſucking. The female has two paps 'which I meaſured, and found each of them to 'be ſeven inches in diameter, by about four of 'elevation. The teat was an inch thick. The 'body was eight feet two inches in circumfe-'rence. The tail was like a large pallet, nine-'teen inches in length, fifteen inches broad at 'the wideſt part, and about three inches thick 'at the extremity. The ſkin of the back was 'double the thickneſs of an ox's hide, but much 'thinner on the belly. It is of a brown ſlate 'colour, and of a coarſe grain, with thick and 'pretty long hairs of the ſame colour, thinly 'ſcattered over the body. This manati weigh-'ed about eight hundred pounds. Along with 'the mother, the young one was taken, which 'was nearly three feet long. A part of the tail 'was roaſted on a ſpit, and we found it to be as 'good and delicate as veal. The herb upon 'which theſe animals feed is from eight to ten 'inches long, narrow, pointed, tender, and of a 'beautiful green colour. In ſome places, this 'herb is ſo abundant that the bottom of the 'ſea has the appearance of a meadow. The

'turtles likewiſe feed upon it*,' &c. Father Magnin de Fribourg ſays, that the manati eats ſuch graſs as he can reach without coming out of the water. . . . That its eyes are about the ſize of a filberd; that its ears are ſo narrow as hardly to admit a probe; that, within the ears, there are two ſmall perforated bones; that the Indians hang theſe bones to their neck as a trinket. . . Its cry reſembles the lowing of a cow†.

Father Gumilla relates, that there are immenſe numbers of manati in the great lakes of the Oronoko: 'Each of theſe animals,' ſays he, 'weighs from ſix to ſeven hundred pounds. 'They feed upon herbs. Their eyes are very 'ſmall, and the auditory paſſages ſtill ſmaller. 'When the river is low, they come to paſture 'on its margin. The female always brings 'forth two young, which ſhe carries at her paps, 'and holds them ſo firm with her two hands, 'that they never ſeparate, whatever movement 'ſhe makes. The young, when new born, 'weigh each of them thirty pounds. The 'milk of the female is very thick. Below the 'ſkin, which is much thicker than that of an ox, 'we find four ſtrata, or layers; two of them 'conſiſt of fat, and the other two of very tender, ſavory fleſh, which, when roaſted, has 'the flavour of pork and the taſte of veal. Theſe 'animals, when rain is about to fall, ſpring out

* Nouv. Voy. aux Iſles de l'Amerique, tom. ii. p. 200.

† Extrait d'un MS. du Pere Magnin de Fribourg.

'of

'of the water to a conſiderable height *.' Both Gumilla and Tertre ſeem to be deceived, when they aſſert that the females produce two young at a time: For it is almoſt certain, as formerly remarked, that they bring forth one only.

In fine, M. de la Condamine, who obligingly communicated to me a drawing of the manati, made by himſelf, on the river of the Amazons, gives a more perfect account of the manners of this animal than any other author. 'Its fleſh and 'fat,' he remarks, 'are analogous to thoſe of 'veal: Father Acuna renders the reſemblance 'ſtill more complete, by beſtowing horns on it, 'which Nature never provided. It is not, pro-'perly ſpeaking, amphibious; for it cannot go 'entirely out of the water, having only, near 'the head, two flat fins, in the form of wings, 'about ſixteen inches long, which ſerve it for 'arms and hands: It advances its head only 'out of the water, in order to reach the graſs 'upon the ſhore. The one of which I drew a 'figure was a female. Its length was ſeven 'feet and a half, and its greateſt width two feet. 'I have ſince ſeen them much larger. The eyes 'of this animal have no proportion to the ſize 'of its body; they are round, and only three 'lines in diameter. The auditory paſſages are 'ſtill ſmaller, and appear like pin-holes. 'The manati is not peculiar to the river of the 'Amazons, but is equally common in the Oro-

* Hiſt. de l'Orenoque, par le P. Gumilla.

'noko. It is alſo found, though not ſo frequently, in the Oyapoc, and in ſeveral other rivers in the neighbourhood of Cayenne, and on the coaſts of Guiana, and probably elſewhere. This is the ſame animal which was formerly called *manati*, and now *lamantin*, at Cayenne, and in our American iſlands; but I believe the ſpecies is ſomewhat different. They are never met with in the high ſeas, and are even rare in the mouths of rivers. But they are found, at more than a thouſand leagues from the ſea, in moſt of the large rivers which fall into that of the Amazons, as in the Gualaga, the Paſtaca, &c. In aſcending the river of the Amazons, they are ſtopped by the Pongo (cataract) of Borja, above which they never appear*.'

I have now given a conciſe account of all that is known concerning the manati. It were to be wiſhed that ſome of the inhabitants of Cayenne, among whom there are ſeveral perſons well acquainted with natural hiſtory, would examine this animal, and give us a deſcription of its internal parts, particularly thoſe of reſpiration, of digeſtion, and of generation. It appears, but we are by no means certain, that there is a large bone in the penis, and a foramen ovale in the heart; that the lungs are ſingularly conſtruct-

* Voyage ſur la Riviere des Amazones, par M. de la Condamine, p. 154. Mem. de l'Acad. des Sciences, 1745, p. 464.

ed;

ed; and that it has ſeveral ſtomachs, as in the ruminating animals.

Beſides, the ſpecies of the manati is not confined to the ſeas and rivers of the New World, but ſeems likewiſe to exiſt on the coaſts and in the rivers of Africa. M. Adanſon ſaw manatis in Senegal, from which he brought one of their heads and gave it to me; and, at the ſame time, he obliged me with a deſcription of this animal, which he made on the ſpot, and which I here inſert in his own words: 'I ſaw many of theſe 'animals. The largeſt exceeded not eight feet 'long, and weighed about eight hundred pounds. 'A female of five feet three inches in length, 'weighed only a hundred and ninety-four 'pounds. They are of a blackiſh aſh-colour. 'There are hairs thinly ſcattered over the whole 'body, in the form of briſtles, and are nine lines 'long. The head is conical, and of a middling 'ſize, in proportion to that of the body. The 'eyes are round and very ſmall. The iris is of a 'deep blue colour, and the pupil black. The 'muzzle is almoſt cylindrical; the two jaws are 'nearly of an equal ſize, and the lips are thick 'and fleſhy. It has no teeth but grinders, in 'either jaw. The tongue is of an oval form, 'and attached, almoſt as far as the point, to 'the under-jaw. It is ſingular, that almoſt all 'authors and travellers have given ears to this 'animal. I could not diſcover, in any of them,

'a hole ſufficient even to admit a ſmall probe *. 'He has two arms or fins, ſituated at the origin of the head, which is not diſtinguiſhable 'from the trunk by any kind of neck, or by 'ſhoulders that are perceptible. Theſe arms 'are nearly cylindrical, and conſiſt of three 'principal articulations; the anterior one forms 'a kind of flat hand, in which the toes are 'only to be diſtinguiſhed by four claws of 'a ſhining reddiſh brown colour. The tail is 'horizontal, like that of the whale; and it has 'the figure of a baker's ſhovel. The female 'has two paps, rather elliptic than round, and 'ſituated near the pits of the arms. The ſkin 'is half an inch thick on the belly, nine lines 'on the back, and an inch and a half on the 'head. The fat is white, and two or three 'inches thick. The fleſh is of a pale red colour, 'and more delicate than veal. The Jalofe Negroes call this animal *lereou*. It lives upon 'herbage, and is found in the mouth of the 'river Niger.'

From this deſcription, it is obvious, that the manati of Senegal differs not from that of

* It is certain, however, that this animal has external auditory paſſages. M. de la Condamine informed me, that he had ſeen and meaſured them, and that they exceeded not half a line in diameter. As the manati has the power of contracting or ſhutting them, it is probable that they had eſcaped the obſervation of M. Adanſon, eſpecially as theſe paſſages are very ſmall, even when the animal keeps them open.

Cayenne;

Cayenne; and, from a compariſon made by M. Daubenton of the head of a Senegal manati with that of a fœtus * of the Cayenne lamantin, he preſumes that they are of the ſame ſpecies. The teſtimonies of travellers † correſpond with our opinion: That of Dampier, in particular, is poſitive, and his remarks merit inſertion: 'While we lay here, our Muſkito men went in 'their canoe, and ſtruck us ſome manatee, or 'ſea-cow. Beſides this Blewfield's river, I have

* This fœtus was ſent to us by M. le Chevalier Turgot, governour of Guiana.

† Oexmelin relates, that there are lamantins on the coaſts of Africa, and that they are more frequent on the Senegal coaſt than in the river Gambia; *Hiſt. des Avanturiers, tom.* ii. *p.* 115. Guat aſſures us, that he ſaw many of theſe animals off the iſland of Rodrigue. The head of the lamantin of this iſland, he remarks, reſembles that of a hog, except that the ſnout is not ſo ſharp. The large lamantins are about twenty feet in length. ——— This animal has warm blood, a coarſe, hard, blackiſh ſkin, with ſome thinly ſcattered hairs on it, ſmall eyes, and two holes, which it opens and ſhuts, and may be properly called its *ears*. As it often retracts its tongue, which is not large, ſeveral authors have imagined that it had none. It has grinders, but no cutting teeth; and its gums are ſufficiently hard to enable it to browſe herbage. ——— I never ſaw above one young along with the females, which inclines me to think that they bring forth one only at a time. —— We ſometimes found three or four hundred of theſe animals together. They feed upon a kind of herb which grows in the bottom of the ſea. They were ſo gentle, that we often felt them, in order to ſelect the fatteſt. We paſſed a rope under their tail to pull them out of the water. We never ſeized the largeſt, becauſe they would have coſt us too much labour: Beſides, their fleſh is not ſo delicate as that of the young. ——— We never obſerved this animal on land, where I ſuſpect it could not crawl; and I believe that it is not amphibious; *Voyage de la Guat, tom.* i. *p.* 93.

'ſeen of the manatee in the bay of Campeachy,
'on the coaſts of Bocca del Drago, and Bocco
'del Toro, in the river of Darien, and among
'the South Keys, or little iſlands of Cuba. I
'have heard of their being found on the north
'of Jamaica a few, and in the rivers of Suri-
'nam in great multitudes, which is a very low
'land. I have ſeen of them alſo at Mindanea,
'one of the Philippine iſlands, and on the coaſt
'of New Holland. . . . The manatee delights
'to live in brackiſh water; and they are com-
'monly in creeks and rivers near the ſea. It is
'for this reaſon, poſſibly, they are not ſeen in
'the South Seas, that ever I could obſerve,
'where the coaſt is generally a bold ſhore, that
'is, high land, and deep water cloſe home by
'it, with a high ſea or great ſurges, except in
'the bay of Panama; yet even there is no ma-
'natee. Whereas the Weſt Indies, being, as
'it were, one great bay compoſed of many
'ſmaller, are moſtly low land and ſhoal water,
'and afford proper paſture, as I may ſay, for
'the manatee. Sometimes we find them in
'ſalt water, ſometimes in freſh, but never far
'at ſea. And thoſe that live in the ſea at ſuch
'places where there is no river nor creek fit for
'them to enter, yet do commonly come once or
'twice in twenty-four hours to the mouth of
'any freſh water river that is near their place
'of abode. They live on graſs ſeven or eight
'inches long, and of a narrow blade, which
'grows

Plate CCLIV.

SEAL.

Plate CCLV.

SMALL SEAL.

Plate CCLVI.

WALRUS.

Plate CCLVII.

YOUNG MONATI.

'grows in the ſea in many places, eſpecially among iſlands near the main. This graſs groweth likewiſe in creeks, or in great rivers near the ſides of them, in ſuch places where there is but little tide or current. They never come aſhore, nor into ſhallower water than where they can ſwim. Their fleſh is white, both the fat and the lean, and extraordinary ſweet wholeſome meat. The tail of a young cow is much eſteemed; but, if old, both head and tail are very tough. A calf that ſucks is the moſt delicate meat; privateers commonly roaſt them, as they do alſo great pieces cut out of the bellies of the old ones.'

OF THE DEGENERATION OF ANIMALS.

WHENEVER man began to change his climate, and to migrate from one country to another, his nature was ſubjected to various alterations. In temperate countries, which we ſuppoſe to be adjacent to the place where he was originally produced, theſe alterations have been ſlight; but they augmented in proportion as he receded from this ſtation: And, after many ages had elapſed; after he had traverſed whole continents, and intermixed with races already degenerated by the influence of different climates; after he was habituated to the ſcorching heats of the South, and the frozen regions of the North; the changes he underwent became ſo great and ſo conſpicuous, as to give room for ſuſpecting, that the Negro, the Laplander, and the White, were really different ſpecies, if, on the one hand, we were not certain, that one man only was originally created, and, on the other, that the White, the Laplander, and the Negro, are capable of uniting, and of propagating the great and undivided family of the human kind. Hence thoſe marks which

diſtinguiſh men who inhabit different regions of the earth, are not original, but purely ſuperficial. It is the ſame identical being who is varniſhed with black under the Torrid Zone, and tawned and contracted by extreme cold under the Polar Circle. This circumſtance is alone ſufficient to ſhow, that the nature of man is endowed with greater ſtrength, extenſion, and flexibility, than that of any other terreſtrial being; for vegetables, and almoſt all the animals, are confined to particular ſoils and climates. This extenſion of our nature depends more on the qualities of the mind than on thoſe of the body. It is by the mind that man has been enabled to find thoſe reſources which the delicacy of his body required, to brave the inclemency of the ſky, and to conquer the rigidity and barrenneſs of the earth. He may be ſaid to have ſubdued the elements: By an exertion of his intellect, he produced the element of fire, which had no exiſtence on the ſurface of the earth. His ſagacity taught him how to clothe his body, and to build houſes for defending himſelf againſt every external attack. By the powers of genius he ſupplied all the qualities which are wanting in matter. Without poſſeſſing the ſtrength, the magnitude, or the robuſtneſs of moſt animals, he knew how to conquer, to tame, and to confine them: He made himſelf maſter of thoſe regions which Nature ſeemed to have reſigned to them as an excluſive poſſeſſion.

The

The earth is divided into two great continents. The antiquity of this diviſion exceeds that of all human monuments; and yet man is more ancient; for he is the ſame in both worlds. The Aſiatic, the European, and the Negro, produce equally with the American. Nothing can be a ſtronger proof that they belong to the ſame family, than the facility with which they unite to the common ſtock. The blood is different; but the germ is the ſame. The ſkin, the hair, the features, and the ſtature, have varied, without any change in the internal ſtructure. The type is general and common: And if, by any great revolution, man were forced to abandon thoſe climates which he had invaded, and to return to his native country, he would, in the progreſs of time, reſume his original features, his primitive ſtature, and his natural colour. But the mixture of races would produce this effect much ſooner. A white male with a black female, or a black male with a white female, equally produce a mulatto, whoſe colour is brown, or a mixture of black and white. This mulatto intermixing with a white, produces a ſecond mulatto leſs brown than the former; and, if the ſecond mulatto unites with a white, the third will have only a ſlight ſhade of brown, which will entirely vaniſh in future generations. Hence, by this mixture, 150, or 200 years, are ſufficient to bleach the ſkin of a Negro. But, to produce the ſame effect by the influence of climate alone,

many

many centuries would perhaps be neceſſary. Since the Negroes were tranſported to America, which is about two hundred years ago, the Negro families, who have preſerved themſelves from mixture, ſeem not to have loſt any ſhade of their original colour. The climate of South America, it is true, being ſufficiently hot to tawn its inhabitants, we ought not to be ſurpriſed that the Negroes there continue black. To put the change of colour in the human ſpecies to the teſt of experiment, ſome Negroes ſhould be tranſported from Senegal to Denmark, where the inhabitants have generally white ſkins, golden locks, and blue eyes, and where the difference of blood and oppoſition of colour are greateſt. Theſe Negroes muſt be confined to their own females, and all croſſing of the breed ſcrupulouſly prevented. This is the only method of diſcovering the time neceſſary to change a Negro into a White, or a White into a Black, by the mere operation of climate.

This is the greateſt alteration that climate has produced in man, and yet it is only ſuperficial. The colour of the ſkin, hair, and eyes, varies by the influence of climate alone. The other changes, ſuch as thoſe of ſtature, figure, features, and quality of the hair, ſeem to require the joint operations of climate and other cauſes; for, in the Negro race, who have generally criſped wool inſtead of hair, a flat noſe, and thick lips, there are whole nations with long hair and regular features:

features: And, in the race of Whites, if we compare the Dane to the Calmuck Tartar, or even the Finlander to the Laplander, whoſe nations are contiguous, we ſhall find among them as great a difference in features and ſize as takes place among the Negroes. To produce ſuch alterations, therefore, which are deeper than the former, ſome other cauſes muſt concur with the influence of climate. The moſt direct and general cauſe is the quality of the food. It is chiefly by aliment that man receives the influence of the ſoil which he inhabits: That of the air and climate acts more ſuperficially. While the climate changes the colour of the ſkin, food acts upon the internal form by its qualities, which are always related to thoſe of the earth by which it is produced. Even in the ſame country, we ſee ſtriking differences between thoſe who occupy the heights and thoſe who inhabit the low grounds. The inhabitants of the mountains are always better made, more vivacious, and more beautiful than thoſe of the valley. Hence, in countries remote from the original climate, where the herbs, fruits, grains, and the fleſh of animals, differ both in quality and ſubſtance, the men who feed upon theſe articles muſt undergo ſtill greater changes. Theſe impreſſions are not ſuddenly made. A conſiderable time is neceſſary before man receives the tinge peculiar to the climate, and a ſtill longer time before the ſoil communicates to him its qualities.

It

It requires ages, joined to the conſtant uſe of the ſame food, to change the features, the ſize of the body, and the ſubſtance of the hair, and to produce thoſe internal alterations which, when perpetuated by generation, become general and permanent characteriſtics which diſtinguiſh the different races and nations who compoſe the aggregate of the human ſpecies.

In brute animals, theſe effects are greater and more ſuddenly accompliſhed; becauſe they are more nearly allied to the earth than man; becauſe their food being more uniformly the ſame, and nowiſe prepared, its qualities are more decided, and its influence ſtronger; and becauſe the animals, being unable to cloathe themſelves, or to uſe the element of fire, remain perpetually expoſed to the action of the air, and all the inclemencies of the climate. For this reaſon, each of them, according to its nature, has choſen its zone and its country: For the ſame reaſon, they remain there, and, inſtead of diſperſing themſelves, like man, they generally continue in thoſe places which are moſt friendly to their conſtitutions. But, when forced by men, or by any revolution on the globe, to abandon their native ſoil, their nature undergoes changes ſo great, that, to recogniſe them, recourſe muſt be had to accurate examination, and even to experiment and analogy. If to theſe natural cauſes of alteration in free animals, we add that of the empire of man over thoſe which he has reduced to ſlavery,

ſlavery, we will be aſtoniſhed at the degree to which tyranny can degrade and disfigure Nature; we will perceive the marks of ſlavery, and the prints of her chains; and we will find, that theſe wounds are deeper and more incurable, in proportion to their antiquity; and that, in the preſent condition of domeſtic animals, it is perhaps impoſſible to reſtore their primitive form, and thoſe attributes of nature which we have taken from them.

Thus the temperature of the climate, the quality of the food, and the evils produced by ſlavery, are the three cauſes of the changes and degeneration of animals. The effects of each merit a ſeparate examination; and their relations, when viewed in detail, will exhibit a picture of Nature in her preſent condition, and of what ſhe was before her degradation.

Let us compare our pitiful ſheep with the mouflon, from whom they derived their origin. The mouflon is a large animal. He is fleet as a ſtag, armed with horns and thick hoofs, covered with coarſe hair, and dreads neither the inclemency of the ſky, nor the voracity of the wolf. He not only eſcapes from his enemies by the ſwiftneſs of his courſe, but he reſiſts them by the ſtrength of his body, and the ſolidity of the arms with which his head and feet are fortified. How different from our ſheep, who ſubſiſt with difficulty in flocks, who are unable to defend themſelves by their numbers, who cannot

not endure the cold of our winters without ſhelter, and who would all periſh, if man withdrew his protection? In the warmeſt climates of Aſia and Africa, the mouflon, who is the common parent of all the races of this ſpecies, appears to be leſs degenerated than in any other region. Though reduced to a domeſtic ſtate, he has preſerved his ſtature and his hair; but the ſize of his horns are diminiſhed. Of all domeſtic ſheep, thoſe of Senegal and India are the largeſt, and their nature has ſuffered leaſt degradation. The ſheep of Barbary, Egypt, Arabia, Perſia, Kalmuck, &c. have undergone greater changes. In relation to man, they are improved in ſome articles, and vitiated in others. But, with regard to Nature, improvement and degeneration are the ſame thing; for they both imply an alteration of original conſtitution. Their coarſe hair is changed into fine wool. Their tail, loaded with a maſs of fat, has acquired a magnitude ſo incommodious, that the animals trail it with pain. While ſwollen with ſuperfluous matter, and adorned with a beautiful fleece, their ſtrength, agility, magnitude, and arms, are diminiſhed: Theſe long tailed ſheep are half the ſize only of the mouflon. They can neither fly from danger, nor reſiſt the enemy. To preſerve and multiply the ſpecies, they require the conſtant care and ſupport of man.

The degeneration of the original ſpecies is ſtill greater in our climates. Of all the quali-

ties of the mouflon, our ewes and rams have retained nothing but a ſmall portion of vivacity, which yields to the crook of the ſhepherd. Timidity, weakneſs, reſignation, and ſtupidity, are the only melancholy remains of their degraded nature. To reſtore their original ſize and ſtrength, our Flanders ſheep ſhould be united with the mouflon, and prevented from propagating with inferior races; and, if we would devote the ſpecies to the more uſeful purpoſes of affording us good mutton and wool, we ſhould imitate ſome neighbouring nations in propagating the Barbary race of ſheep, which, after being tranſported into Spain, and even into Britain, have ſucceeded very well. Strength and magnitude are male attributes; plumpneſs and beauty of ſkin are female qualities. To obtain fine wool, therefore, our rams ſhould have Barbary ewes; and, to augment the ſize, our ewes ſhould be ſerved with the male mouflon.

Our goats might be managed in the ſame manner. By intermixing them with the goat of Angora, their hair might be changed, and rendered equally uſeful as the fineſt wool. In our climate, the ſpecies of the goat is not ſo much degenerated as that of the ſheep. It appears to be ſtill more degenerated in the warm countries of Africa and India. The ſmalleſt and weakeſt goats are thoſe of Guiney, Juda, &c. and yet theſe countries produce the largeſt and ſtrongeſt ſheep.

The

The ſpecies of the ox is more influenced by nouriſhment than that of any other domeſtic animal. In countries where the paſture is rich, and always ſpringing, they acquire a prodigious ſize. The ancients gave to the oxen of Æthiopia, and ſome provinces of Aſia, the appellation of *elephant-bulls*; becauſe, in theſe countries, they approach to the magnitude of elephants. This effect is produced by the abundance of rich and ſucculent herbage. Of this our own climate affords a proof. An ox fed on the tops of the green mountains of Savoy or Switzerland, acquires double the ſize of our oxen; and yet the oxen in Switzerland, like ours, are fed in ſtables during the greateſt part of the year. The difference ariſes from this circumſtance, that the Switzerland oxen are ſet out to free paſture as ſoon as the ſnow melts; but ours are not permitted to enter the meadows till the hay, which is reſerved for the horſes, is carried off; and, of courſe, they are neither fully nor properly nouriſhed. It would be extremely uſeful to the ſtate, if a regulation were made for aboliſhing promiſcuous paſturage, and encouraging incloſures. The climate has likewiſe conſiderable influence on the nature of the ox. In the northern regions of both continents, he is covered with long ſoft hair, like fine wool. He has alſo a large bunch on his ſhoulders; and this deformity is common to the oxen of Aſia, Africa, and

America. Thoſe of Europe alone have no bunch. The European oxen, however, are the primitive race, to which the bunched kind aſcend, by intermixture, in the firſt or ſecond generation. This race is a variety only of the other, as appears from its being ſubject to very great degradations. The differences in their ſize is enormous. The ſmall zebu of Arabia is not one tenth part of the magnitude of the Æthiopian *bull-elephant*.

In general, the influence of food is greater, and produces more ſenſible effects upon ſuch animals as feed on herbs or fruits. Carnivorous animals, on the contrary, are leſs affected by this cauſe than by the influence of climate; becauſe fleſh is an aliment already aſſimilated to the nature of the animal by which it is devoured. But graſs is the firſt product of the ſoil, and has all the properties of it; and theſe terreſtrial qualities are immediately communicated to the animal.

Thus the dog ſpecies, upon which food ſeems to have a very ſlight influence, is more varied than that of any other carnivorous animal. In his degradations, he appears to follow exactly the differences of climate. He is naked in the warmeſt climates, covered with a coarſe thick hair in the northern regions, and adorned with a fine ſilky robe in Spain and in Syria, where the mild temperature of the air converts the hair

of

of moſt animals into a kind of ſilk. But independent of theſe external varieties, which are produced by the influence of climate alone, the dog is ſubjected to other changes which proceed from his ſituation, his captivity, or the nature of the intercourſe he holds with man. The augmentation and diminution of his ſize, are effects of the attention beſtowed in uniting the largeſt and ſmalleſt individuals. The ſhortening of the tail, muzzle, and ears, proceeds likewiſe from the hand of man. Dogs who, for a few generations, have had their ears and tail cut, tranſmit theſe defects, in a certain degree, to their deſcendants. I have ſeen dogs produced without tails, which I at firſt apprehended to be individual monſters: But I have ſince learned, that this race exiſts, and is perpetuated by generation. Pendulous ears, the moſt general and moſt certain mark of domeſtic ſervitude, are common to almoſt all dogs. Of thirty different races, which compoſe the ſpecies, two or three only have preſerved their primitive ears. The ſhepherd's dog, the wolf-dog, and the dog of the North, have alone erect ears. The voice of theſe animals has likewiſe undergone ſtrange alterations. The dog ſeems to have become clamorous and noiſy in the ſociety of man, who employs his tongue more than any other being; for the dog, in a ſtate of nature, is almoſt mute, uttering a kind of howling when preſſed with hunger only. He acquired his

faculty of barking by commerce with men in polished society; for, when transported to extreme climates, and among a gross people, such as the Laplanders or Negroes, he loses his barking, assumes his natural howling, and becomes almost perfectly mute. The dogs with erect ears, and particularly the shepherd's dog, which is least degenerated, makes also the least use of his voice. As he passes a solitary life in the country, and has no intercourse but with sheep and a few simple men, like them, he is serious and silent, though, at the same time, very active and intelligent. Of all dogs, he has fewest acquired talents, and possesses a greater number of those which are natural. He is likewise the most useful for guarding our flocks, and for the preservation of good order. His race ought, therefore, to be more multiplied than those of other dogs, who minister only to our amusements, and whose numbers are so great, that, in every town and village, the provisions consumed by them would nourish many families.

The domestic state has greatly contributed to vary the colour of animals, which, in general, was originally brown or black. The dog, the ox, the goat, the sheep, the horse, have assumed all kinds of colours. The dog has changed from black to white; and pure white, without any spots, seems to mark the last degree of degeneration, and is generally accompanied with

essential

eſſential imperfections. In the race of white men, thoſe who are remarkably white, and whoſe hair, eye-brows, beard, &c. are likewiſe white, have often a defect in their hearing, and, at the ſame time, red and weak eyes. In the black race, the white Negroes are ſtill more feeble and defective. All thoſe quadrupeds which are abſolutely white, have the ſame faults of dullneſs of hearing and red eyes. This kind of degeneration, though more frequent among domeſtic animals, ſometimes appears among the wild ſpecies, as in thoſe of the elephant, ſtags, fallow-deer, monkeys, moles, and mice; in all of which this colour is uniformly accompanied with ſmaller or greater degrees of bodily weakneſs, and bluntneſs of the ſenſes.

But ſlavery ſeems to have made the deepeſt and moſt conſpicuous impreſſions on the camel. He is brought forth with bunches on his back, and calloſities on his breaſt and knees. Theſe calloſities are evidently blemiſhes occaſioned by friction; for they are filled with pus and corrupted blood. As he never walks but under a heavy load, the preſſure of which prevents the uniform extenſion and growth of the muſcles of the back, and produces a ſwelling in the parts adjacent; in the ſame manner, when he lies down or ſleeps, he is at firſt obliged to reſt upon his folded limbs. This poſture becomes at laſt habitual. For ſeveral hours every day, the whole weight of his body is

ſupported by his breaſt and knees. The ſkin of theſe parts is rubbed off by preſſing againſt the earth, and they ſoon become callous, and loſe their organization. The lama, which, like the camel, paſſes his life under a burden, and alſo repoſes on his breaſt, has ſimilar calloſities, which are perpetuated by generation. The baboons and monkeys, whoſe general poſture, whether aſleep or awake, is ſitting, have calloſities on their buttocks. This callous ſkin even adheres to the bones againſt which it is continually preſſed by the weight of the body. But the calloſities of the baboons and monkeys are dry and heal; becauſe they proceed not from reſtraint, nor from the weight of any foreign load. They are, on the contrary, effects of a natural habit; for theſe animals continue longer in a ſitting than in any other poſture. The calloſities of the monkeys are ſimilar to the double ſkin on the ſole of a man's foot. This ſole is a natural calloſity, which our conſtant habit of walking or ſtanding renders more or leſs thick, according to the quantity of exerciſe we take.

The wild animals, not being under the immediate dominion of man, are not ſubject to ſuch great changes as the domeſtic kinds. Their nature ſeems to vary with different climates; but it is no where degraded: If they were capable of chooſing their climate and their food, the changes they undergo would be ſtill leſs.

But,

But, as they have at all times been hunted and baniſhed by man, or even by the ſtrongeſt and moſt ferocious quadrupeds, moſt of them have been obliged to abandon their native country, and to occupy lands leſs friendly to their conſtitution. Thoſe whoſe nature had ductility enough to accommodate themſelves to this new ſituation, have diffuſed over vaſt territories; while others have had no other reſource than to confine themſelves in the deſerts adjacent to their own country. There is no animal which, like man, has ſpread over the whole ſurface of the earth. A great number of ſpecies are limited to the ſouthern regions of the Old, and others to the ſame regions of the New Continent. Others, though fewer, are confined to the northern regions, and, inſtead of extending to the ſouth, have paſſed from the one Continent to the other, by routes which are ſtill undiſcovered. Other ſpecies inhabit only particular mountains or valleys: And the changes in their nature are, in general, leſs ſenſible, the more they are confined to a ſmall circle.

As climate and food have little influence on wild animals, and the empire of man ſtill leſs, the chief varieties amongſt them proceed from another cauſe. They depend on the number of individuals of thoſe which produce, as well as of thoſe that are produced. In thoſe ſpecies in which the male attaches himſelf to one female, as in that of the roebuck, the young de-

monſtrate the fidelity of their parents by their entire reſemblance to them. In thoſe, on the contrary, the females of which often change the male, as in that of the ſtag, the varieties are numerous: And as, through the whole extent of Nature, there is not one individual perfectly ſimilar to another, the varieties among animals are proportioned to the number and frequency of their produce. In ſpecies, the females of which bring forth five or ſix young three or four times a year, the number of varieties muſt be much greater than in thoſe which produce but a ſingle young once a year. The ſmall animals, accordingly, which produce oftener, and in greater numbers than the larger kinds, are ſubject to greater varieties. Magnitude of body, which appears to be a relative quality only, poſſeſſes poſitive rights in the laws of Nature. Magnitude is as fixed as minuteneſs is changeable. Of this fact we ſhall ſoon be convinced by the following enumeration of the varieties which take place in the large and ſmall animals.

In Guiney, the ears of the wild boar are very long, and lie on his back. In China, his belly is large and pendulous, and his legs are very ſhort. At Cape Verd, and in other places, his tuſks are very thick, and bended like the horns of an ox. In a domeſtic ſtate, and in cold or temperate climates, his ears are half pendulous, and his briſtles are white. I reckon neither

the pecari, nor the babirouſſa, among the varieties of the wild boar; becauſe they belong not to this ſpecies, though they approach nearer to it than to any other.

In warm, dry, and mountainous countries, ſuch as Corſica and Sardinia, the ſtag has loſt one half of his ſize, his hair has become brown, and his horns blackiſh. In cold and moiſt countries, ſuch as Bohemia and the Ardennes, his ſize is increaſed, his coat and horns are almoſt black, and his hair is ſo long that it forms a kind of beard on his chin. In North America, the horns of the ſtag are extended, and branched with crooked antlers. In a domeſtic ſtate, his hair changes from yellow to white; and, unleſs when at liberty, or in very large incloſures, his limbs are deformed and crooked. The axis is not to be reckoned among the varieties of the ſtag: It approaches nearer to that of the fallow-deer, of which, perhaps, it is only a variety.

In the fallow-deer, it is difficult to aſcertain the original ſpecies. He is no where entirely domeſtic nor abſolutely wild. He varies indifferently from yellow to pied, and from pied to white. His horns and tail are alſo larger and longer, in different races, and his fleſh is good or bad, according to the ſoil and climate. Like the ſtag, he is found in both Continents; and he ſeems to be larger in Virginia, and other temperate provinces of America, than in Europe.

rope. The roebuck is likewiſe larger in the New than in the Old Continent. But, in other reſpects, all his variations are confined to ſome differences in the colour of the hair, which changes from yellow to brown. The ſmalleſt roebucks are generally brown, and the largeſt yellow. The roebuck and fallow-deer are the only animals common to both Continents which are larger and ſtronger in the New than in the Old World.

The aſs, though ſubjected to the preſſure of the moſt wretched ſervitude, has undergone few changes; for his nature is ſo obdurate, that it equally reſiſts bad treatment and the inconveniencies of a foreign climate and of coarſe food. Though originally a native of warm countries, he can exiſt and even multiply, without the aſſiſtance of man, in temperate climates. Formerly there were onagers, or wild aſſes, in all the deſerts of Aſia Minor; but they are now rare, and are numerous in the deſerts of Tartary only. The mule of Dauria*, called *czigithai* by the Tartars, is probably the ſame animal with the onager of the other Aſiatic provinces. The former differs from the latter only in the length and colour of the hair, which, according to Mr. Bell, is undulated with brown and white †. Theſe

* Mulus Dauricus fœcundus, *Czigithai* Mongolorum in Dauria; *Muſ. Petropolitanum*, *p.* 335.

† In the foreſts near Kuznetſky on the river Tom, one of the

Theſe *czigithais* are found in the foreſts of Tartary as far as the 51ſt and 52d degree of latitude. They muſt not be confounded with the zebra, whoſe colours are more vivid, and differently diſpoſed. Beſides, the zebra conſtitutes a particular ſpecies, as different from the aſs as from the horſe. In the domeſtic aſs, the ſkin has become ſofter, and loſt thoſe ſmall tubercles which are diſperſed over that of the onagers, and of which the inhabitants of the Levant make the leather called *chagrin*.

The nature of the hare is both flexible and firm; for, though it is diffuſed over almoſt every climate of the Old Continent, yet it continues nearly the ſame. In very cold climates, its hair whitens during the winter, and, in ſummer, reſumes its natural colour, which varies only from yellow to red. The quality of the fleſh likewiſe changes. The fleſh of the reddiſh hares is always the beſt. But the rabbit, though not of ſo flexible a nature as the hare, being leſs diffuſed, and even confined to certain countries, is ſubject to more variations; becauſe the hare is

the ſources of the river Oby, in lat. 51 and 52, there are wild aſſes. I have ſeen many of their ſkins; they have in every reſpect the ſhape of the head, tail, and hoofs of the common aſs; but their ſkin is undulated with white and brown; *Bell's Travels to China*. *Nota*, The ſkins which Mr. Bell ſaw might be thoſe of the zebra; for other travellers allege not that the *czigithais* or *onagers* of Dauria are ſtriped, like the zebra, with brown and white. Beſides, in the Peterſburg cabinet, there are ſkins both of the zebra and of the czigithai, which are equally ſhown to ſtrangers.

every

every where wild, while the rabbit is almoſt every where half domeſtic. The colour of the burrowed rabbits varies from yellow to gray, white, and black. They likewiſe vary in ſize, and in the quantity and quality of the hair. This animal, which is originally a native of Spain, has acquired a long tail in Tartary, and buſhy hair, like felt, in Syria, &c. In cold countries, black hares are ſometimes found. It is likewiſe alleged, that, in Norway, and ſome other northern regions, there are hares with horns. M. Klein has given figures of two of theſe horned hares*. From inſpection of theſe figures, it is eaſy to perceive, that the horns are ſimilar to the *wood*, or horns, of the roebuck. This variety, if it exiſts, is individual only, and probably appears in ſuch places alone where the hare cannot find herbage, and is obliged to feed upon woody ſubſtances, as the bark, buds, and leaves of trees, &c.

The elk, whoſe ſpecies is confined to the northern regions of both Continents, is only ſmaller in America than in Europe; and we ſee, from the enormous horns found under the ground in Canada, Ruſſia, Siberia, &c. that theſe animals were formerly much larger than they are preſent. This difference of ſize was perhaps owing to the perfect tranquillity they enjoyed in their foreſts; and, as man had not yet penetrated into theſe climates, they had it in

* Klein de Quad. p. 52. tab. 3. fig. ad § 21.

their

their power to chooſe their abode in thoſe places where the air, the ſoil, and the water, were moſt agreeable to them. The rain-deer, which the Laplanders have rendered domeſtic, is, for this reaſon, more changed than the elk, which has never been reduced to ſlavery. The wild rain-deer are larger and ſtronger, and have blacker hair than the domeſtic kind. The latter have varied in the colour of the hair, and likewiſe in the ſize of the horns. The rain-deer liverwort conſtitutes the chief food of theſe animals, and ſeems to contribute greatly, by its nutritive quality, to the growth of the horns, which are proportionally larger in the rain-deer than in any other ſpecies. It is, perhaps, the ſame aliment which, in this climate, produces horns in the head of the hare, as well as in that of the female rain-deer; for, in all other climates, there are no horned hares, nor any animal of which the female carries horns as well as the male.

The elephant is the only quadruped upon which the domeſtic ſtate has had no influence; becauſe, in this ſtate, he refuſes to propagate, and, of courſe, tranſmits not to his ſpecies the blemiſhes or defects occaſioned by his unnatural condition. In the elephant, there are only ſlight, and almoſt individual varieties. His natural colour is black; ſome of them, however, are red, and others white; but the number of theſe is exceedingly ſmall. The elephant likewiſe varies in ſize, according to the longitude, or rather the lati-

tude

tude of the climate. Under the Torrid Zone, to which he is entirely confined, he riſes to fifteen feet high, as in the eaſtern parts of Africa; while, in the weſtern regions of the ſame country, he attains not above ten or eleven feet; which is a proof that, though great heat be neceſſary to the full expanſion of his body, exceſſive heat reſtrains and reduces it to ſmaller dimenſions. The magnitude of the rhinoceros is more uniform; and he ſeems to differ from himſelf only by that ſingular character which diſtinguiſhes him from all other animals, namely, the large horn on his noſe. This horn is ſingle in the Aſiatic rhinoceros, and double in the African.

I decline mentioning the varieties which happen in every ſpecies of carnivorous animals; becauſe they are extremely ſlight; and, of all quadrupeds, thoſe which feed upon fleſh are moſt independent of man. By means of this nouriſhment, already concocted by Nature, they receive almoſt none of the qualities of the ſoil which they inhabit. Beſides, being all endowed with ſtrength and weapons, they have the choice of ſoil and climate in their own option; and, conſequently, the three cauſes of change or degeneration, formerly aſſigned, muſt have very little effect upon them.

After this ſlight ſurvey of the variations peculiar to each ſpecies, let us next attend to the moſt important change of the ſpecies themſelves. This is the moſt ancient degeneration; and it

ſeems

ſeems to have taken place in each family, or in each genus, under which the contiguous ſpecies may be comprehended. Of all terreſtrial animals, there are only ſome detached ſpecies, which, like that of a man, conſtitute, at the ſame time, both genus and ſpecies. The elephant, the rhinoceros, the hippopotamus, and the giraffe, form genera, or ſimple ſpecies, which propagate in a direct line only, and have no collateral branches. All the others appear to conſtitute families, in which a principal and common trunk is generally to be recogniſed, and from which different branches ariſe, whoſe numbers are proportioned to the barrenneſs or fertility of the individuals in each ſpecies.

Under this point of view, the horſe, the zebra, and the aſs, are all of the ſame family. If the horſe is the principal trunk, the zebra and the aſs are collateral branches. The number of their reſemblances being infinitely greater than that of their differences, they may be regarded as conſtituting but one genus, of which the chief characters are apparent, and common to the whole three. They alone are whole-hoofed, without any appearance of toes or claws. Though they form three diſtinct ſpecies, they are not abſolutely ſeparated, ſince the jack-aſs produces with the mare, and the horſe with the ſhe-aſs; and it is probable, that, if the zebra were tamed, he would likewiſe produce with the mare and aſs.

The mule, which has always been conſidered as a vitiated production, as a monſter compoſed of two natures, and for that reaſon has been thought incapable of reproduction, is not, however, ſo deeply injured as has been blindly imagined; for it is not abſolutely barren, and its ſterility depends on certain external and peculiar circumſtances. Mules, it is well known, frequently produce in warm countries; and there are ſome examples of their producing even in our temperate climates. But we know not whether this generation ever proceeds from the ſimple union of a male and female mule, or of a mule with a mare, or of a jack-aſs with a mule. There are two kinds of mules; the common large mule which proceeds from the junction of a jack-aſs with a mare, and the ſmall mule, proceeding from the horſe and the ſhe-aſs, which we ſhall diſtinguiſh by the name of *bardeau*. Both kinds were known to the ancients: The firſt they denominated *mulus*, and the ſecond γιννος, *hinnus*, *burdo*. They aſſure us, that the *mulus* * produced with the mare an animal likewiſe called *ginnus*, or *hinnus* †; that the ſhe-

* Mulus equa conjunctus mulum procreavit. . . . . Mula quoque jam facta gravida eſt, ſed non quoad perficeret atque ederet prolem; *Ariſt. Hiſt. Animal. lib.* vi. *cap.* 24.——Eſt in analibus noſtris mulas peperiſſe ſæpe; verum prodigii loco habitum; *Plin. Hiſt. Nat. lib.* viii. *cap.* 44.

† The word *ginnus* is uſed by Ariſtotle in two ſenſes: In the firſt, it denotes any imperfect animal, an abortion, a dwarf mule, proceeding

ſhe-mule eaſily conceived, but ſeldom brought the fœtus to maturity; and that, though examples of mules bringing forth were pretty frequent, yet ſuch productions were always regarded as prodigies. But is not a prodigy in Nature only an effect more rare than ſome others? Thus we ſee that, in certain circumſtances, the mule can generate, and the ſhe-mule conceive and bring forth. Hence nothing but experiments are wanting to diſcover theſe circumſtances, and to acquire new facts concerning generation by the commixture of ſpecies, and, of courſe, concerning the unity or diverſity of each genus. To ſucceed in theſe experiments, the he-mule muſt be joined with a ſhe-mule, with a mare, and with a ſhe-aſs: The ſame proceſs muſt be obſerved with regard to the bardeau; and the reſults of theſe ſix copulations ought to be carefully marked. The female aſs, mule, and bardeau, ſhould likewiſe be ſerved with a horſe. Theſe experiments, though ſimple, have never been tried with a view to explain the nature of generation. I regret that it has never been in my power to try them; but I ſhall hazard the following conjectures on what would probably be their reſults. I imagine, for example, that, of all theſe junctions, that of the he-mule and female bardeau, and

proceeding ſometimes from the horſe and ſhe-aſs: In the ſecond, it ſignifies the particular produce of the mule and mare.

that of the male bardeau and ſhe-mule, would be abſolutely abortive; that the junction of the he and ſhe-mule, and that of the male and female bardeau, might perhaps ſucceed, though rarely; that the he-mule would produce more certainly with the mare than with the ſhe-aſs, and the male bardeau, more certainly with the ſhe-aſs than with the mare; and, in fine, that the horſe and jack-aſs might perhaps produce with both the ſhe-mules, but that the aſs would be more ſucceſsful than the horſe. Theſe trials ſhould be made in a country as warm, at leaſt, as the ſouth of France; and the mules ſhould be ſeven, the horſes five, and the aſſes four years old; becauſe theſe different periods are neceſſary before the three animals acquire their full vigour.

I now give the analogical reaſoning upon which theſe conjectures are founded. In the common order of nature, it is not the males, but the females, which conſtitute the unity of ſpecies. We know, from the examples of the ſheep, which can admit two different males, and be equally fertile with the ram or the he-goat, that the female has much more influence upon the ſpecific qualities of the produce than the male; ſince, from theſe two different males, lambs only, or individuals ſpecifically the ſame with the mother, are propagated. Thus the mule has a greater reſemblance to the mare than to the aſs, and the bardeau to the ſhe-aſs than

to

to the horſe. Hence *the mule ought to produce more certainly with the mare than with the ſhe-aſs, and the bardeau more certainly with the ſhe-aſs than with the mare.* In the ſame manner, the horſe and jack-aſs *would probably produce with both the ſhe-mules;* becauſe, being females, though vitiated, each retains more ſpecific qualities than the male mules: *But the jack-aſs ſhould produce with them more certainly than the horſe;* becauſe the jack-aſs has been obſerved to poſſeſs ſtronger prolific powers, even when joined with a mare, than the horſe; for the former corrupts or deſtroys what had been done by the latter. Of this fact we may be aſſured by firſt ſerving mares with a ſtallion, and next day, or even ſome days after, with a jack-aſs. Mares managed in this manner almoſt conſtantly produce mules, and not horſes. This fact, every circumſtance of which merits attention, ſeems to indicate that the aſs, and not the horſe, is the principal ſtock of this family; ſince the prolific powers of the aſs prevail even with mares, eſpecially as the reverſe does not take place when the aſs precedes the horſe. The latter deſtroys not the generation of the aſs; for the produce is almoſt always a mule. On the other hand, the ſame thing does not take place, when the jack-aſs precedes the horſe with the ſhe-aſs; for the latter deſtroys not the operation of the former. With regard to the copulation of mules among themſelves, I have preſumed it to be ſte-

rile; becauſe, from two temperaments, already vitiated in the article of generation, and which, from their union, muſt be ſtill farther injured, a produce either totally vitiated, or abſolute barrenneſs, is to be expected.

By the mixture of the mule with the mare, of the bardeau with the ſhe-aſs, and of the horſe and jack-aſs with ſhe mules, individuals might be obtained which would aſcend toward the original ſpecies, and would be only half mules. Theſe, like their parents, would not only poſſeſs the power of engendering with thoſe of their primitive ſpecies, but perhaps of producing among themſelves; becauſe, being only half vitiated, their produce would not be more vitiated than the firſt mules: And, if theſe half mules were ſtill barren, or their offspring rare, it is almoſt certain, that, by making them approach another degree toward their original ſpecies, the individuals reſulting from their union, being only vitiated one fourth, would produce among themſelves, and form a new ſtem, which would neither be preciſely that of the horſe, nor that of the aſs. Now, as every thing that can happen has been accompliſhed in time, and either exiſts or has exiſted in Nature, I am inclined to think, that the fertile mule mentioned by the ancients, and which, in the days of Ariſtotle, exiſted in the territories of Syria, above Phœnicia, might be a race of theſe half or quartern mules, which had been produced by the commixtures

commixtures we have juſt now deſcribed; for Ariſtotle ſays in expreſs terms, that theſe fertile mules were perfectly ſimilar to the barren kind*. He clearly diſtinguiſhes them from the *onagri*, or wild aſſes, which he mentions in the ſame chapter; and, conſequently, theſe animals can only be referred to the mules which have ſuffered little vitiation, and preſerved their generative powers. The *czigithai*, or fertile mule of Tartary, it is probable, was not the onager or wild aſs, but this ſame Phœnician mule, whoſe race, perhaps, ſtill remains. The firſt traveller who compares them, will confirm or deſtroy this conjecture. Even the zebra, which has a greater reſemblance to the horſe than to the aſs, might have a ſimilar origin. The conſtrained regularity of his colours, which are diſpoſed in alternate bands of black and white, ſeems to indicate that they proceed from two different ſpecies, which, in their mixture, have ſeparated as much as poſſible; for none of the operations of Nature is ſo abrupt, and ſo little ſhaded, as the

* In terra Syria ſuper Phœnicem mulæ et coeunt et pariunt; ſed id genus diverſum quanquam ſimile; *Ariſt. Hiſt. Anim. lib.* vi. *cap.* 26.——Sunt in Syria quos mulos appellant genus diverſum ab eo quod coitu equæ et aſini procreatur: Sed ſimile facie, quomodo aſini ſylveſtres ſimilitudine quadam nomen urbanorum accepere; et quidem ut aſini illi feri ſic muli præſtant celeritate. Procreant ejuſmodi mulæ ſuo in genere. Cujus rei argumento illæ ſunt quæ tempore Pharnacæ patris Pharnazabim in terram Phrygiam venerunt, quæ adhuc extant. Tres tamen ex novem quos numero olim fuiſſe aiunt, ſervantur hoc tempore; *Idem*, *cap.* 36.

coat of the zebra, where ſhe paſſes quickly and alternately from white to black, and from black to white, without any intermediate ſtep, through the whole extent of the animal's body.

However this matter ſtands, it is certain, from what is above remarked, that mules, in general, which have uniformly been accuſed of ſterility, are neither really nor univerſally barren; and that this ſterility is particularly apparent only in the mule which proceeds from the aſs and horſe; for the mule produced by the he-goat and the ewe is equally fertile as its parents; and moſt of the mules produced by different ſpecies of birds are not barren. It is, therefore, in the particular nature of the horſe and aſs that we muſt ſearch for the cauſe of the ſterility of the mules which proceed from their union; and inſtead of ſuppoſing barrenneſs to be a general and neceſſary defect common to all mules, it ſhould be limited to the mule produced by the aſs and horſe; and even this limitation ought to be reſtricted, as theſe ſame mules, in certain circumſtances, become fertile, particularly when brought a degree nearer their original ſpecies.

The mules produced by the horſe and aſs have their organs of generation as complete as other animals. Nothing ſeems to be defective either in the male or female. The ſeminal fluid of the male is copious; and, as he is not permitted to copulate, he is often ſo preſſed for a diſcharge, that he lies down on his belly, in order

order to produce a colliſion on his fore-legs, which are folded under his breaſt. Theſe animals, therefore, are furniſhed with every thing neceſſary to the act of generation. They are even extremely ardent, and, conſequently, very indifferent in their choice. The males have nearly the ſame vehemence of deſire for the female mule, the ſhe-aſs, and the mare. Hence there is no difficulty of procuring copulations; but, to render theſe prolific, particular attentions are neceſſary. Too much ardour, eſpecially in the females, is generally followed with ſterility; and the female mule is at leaſt as ardent as the ſhe-aſs. Now, we know that the latter rejects the ſeminal fluid of the male, and that, to make her retain it and conceive, ſhe muſt have blows, or water thrown on her crupper, in order to calm the convulſive emotions of deſire which ſubſiſt after copulation, and are the cauſe of this rejection. The ſhe-aſs and female mule, therefore, by their too great ardour, have both a tendency to barrenneſs. This tendency is increaſed by another cauſe: As theſe animals are originally natives of warm climates, cold is an obſtacle to their propagation; and, for this reaſon, they are allowed to copulate in ſummer only. When their union is permitted at any other time, and particularly in winter, it ſeldom produces impregnation. The ſeaſon neceſſary to the ſucceſs of their generation, is equally ſo to the preſervation of their young. The colt muſt

be brought forth when the ſeaſon is warm, otherwiſe it either languiſhes or dies: And, as the ſhe-aſs goes one year with young, ſhe brings forth in the ſame ſeaſon that ſhe conceives. This is a ſufficient proof that heat is neceſſary not only to the fecundity of theſe animals, but to the vigour of their bodies. On account of the great ardour of the female, ſhe is ſerved with a male almoſt immediately after ſhe brings forth. She is not allowed above ſeven or eight days of repoſe between delivery and copulation. Weakened by the birth, ſhe is then leſs ardent, the parts have not had time ſufficient to reſume their former tenſion; and, of courſe, conception is more certain than when ſhe is in full vigour and ardour. In this ſpecies, as in that of the cat, the temperament of the female is ſaid to be much more ardent than that of the male. The jack-aſs, however, is remarkable for vigour. He can cover females ſeveral times a-day ſucceſſively. He has been known to go to ſuch exceſs, without any other incitement than natural appetite, as to die on the ſpot, after eleven or twelve efforts, repeated almoſt without interval; and, to ſupport this great waſte, he took nothing but a few draughts of water. This flame which conſumes him is too vivid to be durable: An aſs ſtallion is ſoon unfit either for propagation or ſervice; and this, perhaps, is the reaſon why the female has been ſaid to have more ſtrength, and to live longer than the male.

It

It is certain, that, with the management formerly recommended, ſhe can live thirty years, and bring forth annually during her whole life. But the male, when not reſtrained from females, abuſes his ſtrength to ſuch a degree, that, in a few years, he loſes the power of engendering.

Hence both the male and female aſſes have a tendency to ſterility by common, and likewiſe by different qualities. The horſe and mare have the ſame tendency. The ſtallion may be given to the mare nine or ten days after ſhe has brought forth, and ſhe can produce five or ſix years in ſucceſſion; but, after that period, ſhe becomes barren. To ſupport her fecundity, ſhe ſhould be allowed an interval of a year between each birth, and treated differently from the ſheaſs. Inſtead of giving her the ſtallion ſoon after delivery, ſhe ſhould be reſtrained from him till the following year, and till her ardour is manifeſted by the external ſigns. Even with theſe precautions, ſhe ſeldom retains her fertility beyond the age of twenty-five years. On the other hand, the horſe, though leſs ardent and more delicate than the jack-aſs, preſerves the faculty of propagating much longer. I have known old horſes, who were unable to mount the mare without the aid of the groom, reſume their vigour when properly placed, and engender at the age of thirty years. In the horſe, the ſeminal fluid is not only leſs abundant, but leſs ſtimulant

lant than in the jack-aſs; for the horſe often copulates without ejection, eſpecially when the mare is preſented to him before he diſcovers any inclination. After enjoyment, he appears to be melancholy; and a conſiderable interval is neceſſary for reſuming his ardour. Beſides, his moſt vigorous efforts are not always ſucceſsful. Some mares are naturally barren, and a greater number of them poſſeſs very little fertility. There are likewiſe ſtallions, which, though apparently vigorous, have very little power. To theſe particular reaſons, we can add a more evident and a more general proof of the ſmall degree of fertility in the horſe and aſs: Of all domeſtic animals, though moſt attention is beſtowed on them, they are the leaſt numerous. In the ox, the ſheep, the goat, and particularly the hog, the dog, and the cat, the individuals are ten, and perhaps a hundred times more numerous than thoſe of the horſe and aſs. Thus their defectiveneſs in fecundity is proved by the facts; and to all theſe cauſes, the ſterility of mules, which are produced by the union of thoſe naturally unprolific ſpecies, ought to be aſcribed. In thoſe ſpecies, on the contrary, which, like the ſheep and goat, are numerous, and conſequently prolific, the mules proceeding from their intermixture are not barren, but aſcend to the original ſpecies in the firſt generation. But it would require two, three, and perhaps four generations,

to

to enable the mule produced by the union of the horſe and aſs to arrive at the ſame degree of re-eſtabliſhment of its nature.

Another kind of mule has been ſaid to have reſulted from the copulation of the bull and mare. I believe it is firſt mentioned by Columella. Geſner quotes him, and adds, that theſe mules are found near Grenoble, and are called, in French, *jumars*. I had one of theſe jumars brought to me from Dauphiny, and another from the Pyrenees; and I diſcovered, both from inſpecting their external figure, and diſſecting their internal parts, that they were nothing but bardeaus, or mules produced between the horſe and ſhe-aſs. Hence I am led to conclude, both from this experiment, and from analogy, that this kind of mule has no exiſtence, and that the word *jumar* is a chimerical name, without any real object. The nature of the bull is too remote from that of the mare to permit their producing together; the one having four ſtomachs, horns, cloven feet, &c. and the other being whole-hooſed, hornleſs, and having but one ſtomach. The organs of generation are likewiſe ſo very different, both in ſize and proportions, that there is no reaſon for ſuppoſing that they could unite either with pleaſure or ſucceſs. If the bull were to produce with any other ſpecies than his own, it would be with the buffalo, which reſembles him in ſtructure as well as in natural habits; yet we have never heard of mules produced by theſe

two

two animals, though they are often found in the ſame places, either in a domeſtic or a free ſtate. What is related concerning the fertile intercourſe of the ſtag and cow, appears to be equally ſuſpicious as the hiſtory of the jumars, though the ſtag, by his conformation, is not ſo far removed from the nature of the cow as the bull from that of the mare.

The deer-kind, who have *wood* inſtead of horns, and though they chew the cud, and have the ſame internal ſtructure with thoſe animals which have horns, ſeem to conſtitute a ſeparate family, of which the elk is the largeſt ſtem, and the rain-deer, the ſtag, the axis, the fallow-deer, and the roebuck, are ſmaller and collateral branches; for there are only ſix ſpecies of quadrupeds, whoſe head is armed with branched horns, which fall off and are renewed every year: Independent of this generic character, which is common to the whole, they reſemble each other ſtill more in ſtructure and natural habits. We ſhould, therefore, rather expect mules from a commixture of the ſtag or fallow-deer with the axis or rain-deer, than from that of the ſtag with the cow.

We have ſtill greater reaſon to regard all the ſheep and all the goats as conſtituting the ſame family; becauſe they produce together mules, which aſcend directly, and in the firſt generation, to the ſpecies of the ſheep. To this numerous family of ſheep and goats, we might add

thoſe

thoſe of the gazelles and bubalus, which are no leſs numerous. In this genus, which comprehends more than thirty ſpecies, it appears that the mouflon, the wild goat, the chamois goat, the antilope, the bubalus, the condoma, &c. are principal ſtems, and that the others are only acceſſory branches, who have retained the chief characters of the ſtocks from which they iſſued; but, at the ſame time, they have been prodigiouſly varied by the influence of climate, food, and a ſtate of ſervitude, to which man has reduced moſt of theſe animals.

The dog, the wolf, the fox, the jackal, and the iſatis, form another genus, the different ſpecies of which are ſo ſimilar, particularly in their internal ſtructure and the organs of generation, that it is difficult to conceive why they do not intermix. From the experiments I made, with regard to the union of the dog with the wolf and fox, the repugnance to copulation ſeemed to proceed rather from the wolf than the dog, that is, from the wild, and not from the domeſtic animal; for the bitches which I put to the trial would have willingly permitted the fox and wolf; but the ſhe-wolf and female fox would never ſuffer the approaches of the dog. The domeſtic ſtate ſeems to render animals leſs faithful to their ſpecies. It likewiſe makes them more ardent and more fertile: The bitch generally produces twice in a year: But the ſhe-

wolf

wolf and the female fox produce only once in the ſame period: And it is probable, that the dogs who have become wild and have multiplied in the iſland of Juan Fernandes, and in the mountains of St. Domingo, produce but once a-year, like the fox and wolf. Were this fact aſcertained, it would fully eſtabliſh the unity of genus in theſe three animals, who reſemble each other ſo much in ſtructure, that their repugnance to intermixing muſt be ſolely aſcribed to ſome external circumſtances.

The dog ſeems to be an intermediate ſpecies between the fox and wolf. The ancients affirm, that, in certain circumſtances, and in particular countries, the dog produces with the wolf and fox *. I endeavoured to aſcertain this fact; and, though I did not ſucceed, we muſt not conclude it to be impoſſible; for my experiments were confined to captive animals; and it is well known, that, in ſome ſpecies, captivity alone is ſufficient to extinguiſh the deſire, and to create a repugnance to copulation, even with their equals. This ſtate of reſtraint, therefore, ought to have a ſtill greater effect in preventing their union with individuals of a different ſpe-

* In Cyrenenſi agro lupi cum canibus coeunt, et *Laconici* canes ex vulpe et cane generantur: *Ariſt. Hiſt. Anim. lib.* viii. *cap.* xxviii. . . . Coeunt animalia generis ejuſdem ſecundum naturam, ſed ea etiam quorum genus diverſum quidem, ſed natura non multum diſtat; ſi modo par magnitudo ſit et tempora æquent graviditatis, raro id fit, ſed tamen id fieri et in canibus et in vulpibus, et in lupis, certum eſt; *Idem, de Generat. Anim. lib.* ii. *cap.* v.

cies.

cies. But I am perſuaded, that the dog, when at liberty and deprived of his own female, would intermix with the wolf and fox, eſpecially after he had become wild, loſt the odour of a domeſtic ſtate, and approached theſe animals in their natural manner and habits. I believe not, however, that the fox and wolf ever unite, ſince they both live in the ſame climates, without attempting to intermix. If ever, therefore, they belonged to the ſame ſpecies, their degeneration muſt be referred to a period beyond the records of hiſtory. This is the reaſon why I aſſerted, that the dog was an intermediate ſpecies between the fox and wolf: His ſpecies is alſo common, ſince he is capable of uniting with both. And, if any circumſtance could ſhew that theſe three animals proceeded originally from the ſame ſtock, it is the common relation between the dog and the fox and wolf, which brings the ſpecies nearer each other than all the ſimilarities in their figure and organization. To reduce the fox and wolf, therefore, to one ſpecies, we muſt aſcend to a ſtate of nature in a very remote period of antiquity. But, in their actual condition, the wolf and fox muſt be regarded as the chief ſtems in the genus of the five animals under conſideration. The dog, the jackal, and the iſatis, are only lateral branches ſituated between the two firſt. The jackal participates of the dog and wolf, and the iſatis of the jackal and fox. It likewiſe appears, from a great number of autho-

rities, that the jackal and dog eaſily produce together; and we perceive, from the deſcription and hiſtory of the iſatis, that he reſembles the fox almoſt entirely in figure and temperament; that they equally frequent cold countries; but that he, at the ſame time, has the natural diſpoſitions of the jackal, the continual barking, the clamorous voice, and the habit of going always in packs.

The ſhepherd's dog, which I conſider as the original ſtem of all dogs, makes, at the ſame time, the neareſt approach to the fox in figure. His ſize is the ſame, and, like the fox, he has erect ears, a pointed muzzle, and a ſtraight, trailing tail. He likewiſe reſembles the fox in voice, ſagacity, and ſubtlety of inſtinct. Hence this dog may have originally proceeded from the fox, if not in a direct, at leaſt in a collateral line. The dog that Ariſtotle calls *canis laconicus*, and which he aſſures us is produced from a mixture of the fox and dog, may be the ſame with the ſhepherd's dog; or, at leaſt, it has a greater affinity to him than to any other dog. It is natural to imagine, that the epithet *laconicus*, which Ariſtotle does not explain, was given to this dog, becauſe he was found in Laconia, a province of Greece. But, if we attend to the origin of this *laconic* dog, we will perceive, that the race was not limited to the country of Laconia alone, but muſt have been equally common in all countries inhabited by foxes. This circumſtance

ſtance induces me to think, that Ariſtotle employed the epithet *laconicus* to expreſs the brevity and acuteneſs of the animal's voice; becauſe he did not bark like other dogs, but yelped like a fox. Now, our ſhepherd's dog is beſt entitled to the denomination of *laconic;* for, of all dogs, his voice is ſharpeſt and moſt ſeldom employed. Beſides, the characters aſcribed by Ariſtotle to this *laconic* dog correſpond very well with thoſe of the ſhepherd's dog; and this circumſtance contributes ſtill farther to convince me that they were the ſame. That the reader may judge whether my conjecture is properly founded, I have inſerted the entire paſſage of Ariſtotle in the margin*.

The

* Laconici canes ex Vulpe et Cane generantur; *Hiſt. Anim. lib.* viii. *cap.* xxviii. —— Canum genera plura ſunt. Coït Laconicum menſe ſuæ ætatis octavo, et crus jam circa id tempus attollentes nonnulli urinam reddunt. ——— Gerunt Laconicæ canes uterum parte ſexta anni, hoc eſt, ſexagenis diebus, aut uno vel altero plus minuſve. Catelli cæci gignuntur, nec ante duodecimum diem viſum accipiunt. Coeunt canes poſtæquam parerunt ſexto menſe, nec citius. Sunt quæ parte quinta anni uterum ferunt, hoc eſt, duobus et ſeptuaginta diebus, quorum catelli duodecim diebus luce carent: Nonnullæ quarta parte anni, hoc eſt, tribus menſibus, ferunt, quarum catelli diebus decem et ſeptem luce carent. Lac ante diebus quinque, quam pariant, habent canes magna ex parte; verum nonnullis etiam ſeptem aut quatuor diebus anticipat: Utile ſtatim ut pepererint eſt; genus laconicum poſt coitum diebus triginta habere lac incipit. ——— Parit canis duodecim complurimum, ſed magna ex parte quinque aut ſex.

The genus of cruel and rapacious animals is one of the moſt numerous and moſt diverſified. Evil

Unum etiam aliquam peperiſſe certum eſt: Laconicæ magna ex parte octo pariunt. Coeunt quandiu vivunt et mares et fœminæ. Peculiare generis laconici eſt, ut cum laborarint coire melius quam per otium poſſint; vivit in hoc eodem genere mas ad annos decem, fœmina ad duodecim: Cæteri canes maxima quidem ex parte ad annos quatuordecim: Sed nonnulli vel ad viginti protrahunt vitam.——Laconici ſane generis fœminas, quia minus laborant quam mares, vivaciores maribus ſunt: At ſero in cæteris, et ſi non late admodum conſtat, tamen mares vivaciores ſunt; *Idem, lib.* vi. *cap.* xx.——Fœminam et marem natura diſtinxit moribus; ſunt enim fœminæ moribus mollioribus, miteſcunt celerius, et manum facilius patiuntur. Diſcunt etiam imitanturque ingenioſius, ut in genere canum laconico fœminas eſſe ſagaciores quam mares apertum eſt. Moloticum etiam genus venaticum nihilo a cæteris diſcrepat, at pecuarium longe et magnitudine et fortitudine contra belluas præſtat: Inſignes vero animo et induſtria qui ex utroque moloticum dico et laconicum prodierint; *Idem, lib.* ix. *cap.* i.

By the word *genus* Ariſtotle means *race*. He diſtinguiſhes three races of dogs, the *Laconicus*, the *Moloticus*, and the *Pecuarius*. The *Moloticus*, which he likewiſe calls *Venaticus*, is probably our grey-hound, which in Greece and Aſia Minor is the common hunting-dog. The *Pecuarius*, which he ſays greatly exceeds all other dogs in magnitude, is unqueſtionably the maſtiff, and is uſed for defending the cattle from ferocious animals. The *Laconicus*, to which he aſſigns no employment, and only remarks, that it is a dog of great induſtry and labour, and that it is ſmaller than the *Pecuarius*, can be nothing elſe than the ſhepherd's dog, which is very laborious in arranging, reſtraining, and conducting the ſheep, and is more induſtrious and attentive than any other dog. But the greateſt difficulty in theſe paſſages quoted from Ariſtotle conſiſts in the different periods of geſtation which he aſcribes to the different races of dogs. Some of them, he ſays, go with young two months, others two months and a half,

Evil here, as well as elſewhere, aſſumes every kind of form. The lion and the tiger, being detached ſpecies, hold the firſt rank. All the others, as the panther, the ounce, the leopard, the lynx, the caracal, the jaguar, the couguar, the ocelot, the ſerval, the margai, and the cat, conſtitute but one ſanguinary family, the different branches of which are more or leſs extended and diverſified, according to the difference of climates. All theſe animals, though very different in magnitude and figure, reſemble each other in their natural diſpoſitions. They all have fiery eyes, ſhort muzzles, and ſharp, crooked, and retractile claws. They are all deſtructive, ferocious, and untameable. The cat, which is the leaſt and ſmalleſt ſpecies, though reduced to ſlavery, is neither leſs perfidious, nor more obedient. The wild cat has preſerved the character of the family. He is equally cruel, miſchievous, and depredatory, as his larger kindred. They are all equally carnivorous, and enemies to the other animals. Man, with all his powers, has never been able to annihilate them. He has at all times employed againſt

half, and others three months; for all our dogs, of whatever race, go with young about nine weeks, or from ſixty-one to ſixty-three days; and I know not if ever a greater difference in the time of geſtation has been obſerved than three or four days. But Ariſtotle might be more ſkilled in this ſubject than we are: And, if the facts he advances be true, certain dogs muſt have a greater affinity with the wolf than others; for we are aſſured by the hunters, that the wolf goes with young three months, or three months and a half.

them fire, ſteel, poiſon, and ſnares. But, as all the individuals are very prolific, and the ſpecies numerous, the efforts of man have been limited to baniſhing them, and confining them in the deſerts, from which they never iſſue without marking their paths with terror and with blood. A ſingle tiger eſcaping from the foreſt alarms a whole people, and obliges them to take up arms: How dreadful would be the conſequences, if theſe ſanguinary animals went in troops, and, like the wild dogs and jackals, extended their plans of depredation! Nature has beſtowed this intelligence upon timid animals; but has happily denied it to the bold and ſolitary tribes. They always travel alone, and confide ſolely in their courage and ſtrength. It had not eſcaped the obſervation of Ariſtotle, that no animal poſſeſſed of crooked and retractile claws was ſocial, or went in troops *. This remark, which then applied to four or five ſpecies only, which alone were known in his time, is now found to be true, and to extend to ten or twelve ſpecies that have ſince been diſcovered. The other carnivorous animals, as the wolf, the fox, the dog, the jackal, and the iſatis, whoſe claws are ſtraight, go always in troops, and are all timid, and even daſtardly.

By comparing, in this manner, all the quadrupeds, and ranking each under its own ge-

* Nullum animal, cui ungues adunci, gregatile eſſe perpendimus; *Ariſt. Hiſt. Anim. lib.* i. *cap.* i.

nus,

nus, we ſhall find, that the two hundred ſpecies, whoſe hiſtory we have given, may be reduced to a ſmall number of families or principal ſtems, from which all the others have probably derived their origin.

All the animals common to both continents, and all thoſe which are peculiar to the Old World, may be reduced to fifteen genera, and nine ſolitary or detached ſpecies. Theſe genera are, 1. The whole-hoofed genus properly ſo called, which comprehends the horſe, the zebra, and the aſs, together with the fertile and unfertile mules. 2. The large cloven-hoofed, with hollow horns, as the ox and the buffalo, with all their varieties. 3. The ſmall cloven-hoofed, with hollow horns, as the ſheep, the goat, the gazelle, the antilope, and all the other ſpecies which participate of their nature. 4. The cloven-hoofed, with ſolid horns, which fall off and are renewed every year. This family comprehends the elk, the rain-deer, the ſtag, the fallow-deer, the axis, and the roebuck. 5. The ambiguous cloven-hoofed, which is compoſed of the wild boar, and all the other varieties of the hog, as the hog of Siam with a pendulous belly; that of Guiney, with long pointed ears lying on the back; that of the Canaries, with long, thick tuſks, &c. 6. The extenſive genus of digitated carnivorous animals, with crooked and retractile claws, in which are comprehended the panther, leopard, ounce, ſerval, and cat, with

all their varieties. 7. Digitated carnivorous animals with ſtraight and fixed claws, under which are comprehended the wolf, fox, jackal, iſatis, and dog, with all their varieties. 8. Digitated carnivorous animals with fixed claws, and a pouch under the tail. This genus is compoſed of the hyæna, civet, zibet, genet, badger, &c. 9. Digitated carnivorous animals, with a very long body, five toes on each foot, and the thumb ſeparated from the other toes. This genus comprehends the martin, polecat, ſable, ferret, ichneumon, weaſel, vanſire, &c. 10. The numerous family of digitated quadrupeds, which have two large cutting teeth in each jaw, and no prickles on the body. This genus contains the hare, the rabbit, and all the ſpecies of ſquirrels, dormice, marmots, and rats. 11. Digitated quadrupeds with prickles on their body, as the porcupines and hedge-hog. 12. Digitated animals covered with ſcales, as the long-tailed and ſhort-tailed manis, or ſcaly lizards. 13. The amphibious digitated genus, comprehending the otter, beaver, muſk-rats, walrus, and ſeals. 14. The four-handed genus, which includes the apes, baboons, monkeys, makis, loris, &c. 15. Laſtly, the winged quadrupeds, comprehending bats of all kinds.—The nine detached ſpecies are, the elephant, rhinoceros, hippopotamus, giraffe, camel, lion, tiger, bear, and mole, which are all ſubject to a greater or ſmaller number of varieties.

Of theſe fifteen genera and nine detached ſpecies, ſeven genera and two ſpecies are common to both Continents. The two ſpecies are the bear and mole. The ſeven genera are, 1. The large cloven-hoofed, with hollow horns; for the ox is found in America under the form of the biſon. 2. The cloven-hoofed, with ſolid horns; for the elk exiſts in Canada under the name of *orignal*, the rain-deer under that of *caribou*; and ſtags, fallow-deer, and roebucks, are found in almoſt every province of North America. 3. The digitated carnivorous quadrupeds with fixed claws; for the wolf and fox are found in the New as well as in the Old World. 4. The digitated long-bodied genus; for the pine weaſel, martin, and polecat, are found in America. 5. A part of the digitated genus with two large cutting teeth in each jaw, as the ſquirrels, marmots, rats, &c. are likewiſe found in America. 6. The digitated amphibious genus, as the walrus, ſeal, beaver, and otter, exiſts in the northern regions of the New Continent. 7. The digitated winged genus likewiſe exiſts in America; as the bat and vampire.

There remains, therefore, only eight genera and five detached ſpecies, which are peculiar to the Old World: 1. The whole-hoofed genus properly ſo called; for neither horſes, nor aſſes, nor zebras, nor mules, were found in America. 2. The ſmall cloven-hoofed genus with hollow horns;

horns; for ſheep, goats, gazelles, and antilopes, had no exiſtence in the New World. 3. The hog genus; for the ſpecies of the wild boar exiſts not in America; and, though the pecari and its varieties are related to this family, they differ in characters ſo remarkable as to juſtify their ſeparation. 4. The ſame remark is applicable to the carnivorous animals with retractile claws; and, though the jaguar, couguar, ocelot, and margai, appear to belong to this family, none of theſe ſpecies of the New World are found in the Old, and none of thoſe of the Ancient Continent are found in the New. 5. The ſame remark is applicable to the digitated quadrupeds, whoſe bodies are covered with prickles; for, though the coendou and Canada porcupine make a near approach to this genus, they differ widely from the hedge-hogs and porcupines. 6. The digitated carnivorous genus, with fixed claws; for the hyæna, the civets, and the badgers, have no exiſtence in America. 7. The four-handed genus; for, in America, there are no apes, baboons, monkeys, nor makis. The ſapajous, the ſagoins, the opoſſums, &c. though likewiſe four-handed, differ eſſentially from thoſe of the Old Continent. 8. The digitated genus whoſe bodies are covered with ſcales; for none of the ſcaly lizards are found in America; and the ant-eaters, to which the former may be compared, are covered with hair, and differ too much

much from the ſcaly lizards to be admitted into the ſame family.

Of the nine detached ſpecies, ſeven, namely, the elephant, rhinoceros, hippopotamus, giraffe, camel, lion, and tiger, are found only in the Old World; and two, to wit, the bear and mole, are common to both Continents.

If we make a ſimilar enumeration of the animals peculiar to the New World, we ſhall find, that there are about fifteen different ſpecies, which may be reduced to ten genera, and four detached ſpecies. Theſe four ſpecies are the tapir, the cabiai, the lama, and the pecari: But the tapir is properly the only ſpecies which is abſolutely detached; for that of the pecari has varieties; and the pacos may be united with the lama, and the Guiney-pig with the cabiai. The ten genera are, 1. Eight ſpecies of ſapajous. 2. Six ſpecies of ſagoins. 3. The opoſſums, phalangers, the tarſiers, &c. 4. The jaguars, couguars, ocelots, margais, &c. 5. Three or four ſpecies of coaitis. 6. Four or five ſpecies of mouffettes, or ſtinking weaſels. 7. The genus of agouti, comprehending the acouchi, the paca, the aperea, and the tapeti, or Braſilian hare. 8. That of the armadillos, which conſiſts of ſeven or eight ſpecies. 9. Two or three ſpecies of ant-eaters. 10. Two ſpecies of ſloths.

Theſe ten genera and four detached ſpecies, to which the animals peculiar to the New World may be reduced, though they differ from thoſe of

of the Old Continent, have remote relations which ſeem to indicate ſomething common in their formation, and lead us to cauſes of degeneration more ancient, perhaps, than all the others. We formerly made the general remark, that all the animals of the New World were much ſmaller than thoſe of the Old. This great diminution in magnitude, whatever be the cauſe of it, is a primary kind of degeneration, which could not happen without having a conſiderable influence on the figure of all theſe animals; and, in comparing them, we muſt not loſe ſight of this firſt effect.

The largeſt is the tapir, which, as he exceeds not the ſize of an aſs, cannot be compared to the elephant, rhinoceros, or hippopotamus. In the New Continent, he is the largeſt animal, as the elephant is in the Old. Like the rhinoceros, his upper lip is muſcular and prominent; and, like the hippopotamus, he frequents the water. He alone repreſents, in ſome degree, theſe three animals; and his figure, which reſembles the aſs more than that of any other quadruped, ſeems to be as much degraded as his ſtature is diminiſhed. The horſe, the aſs, the zebra, the elephant, the rhinoceros, and the hippopotamus, had no exiſtence in America: Neither was there, in this New World, any animal which could be compared with them either for magnitude or figure. The tapir ſeems to be the leaſt remote from the whole of theſe animals: But, at the

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ſame time, he is ſo mixed, and approaches ſo little to any one of them, that it is impoſſible to attribute his origin to any particular ſpecies: And, notwithſtanding the ſlight relations he has to the rhinoceros, the hippopotamus, and the aſs, he ought to be regarded not only as a peculiar ſpecies, but even as a ſingular genus.

Hence the tapir is not even remotely allied to any ſpecies of the Old Continent, and has hardly any characters which make him approach thoſe animals to which we have been comparing him. In the ſame manner, the cabiai has no external relation to any other animal, and he approaches the Guiney-pig, which belongs to the ſame Continent, in his internal parts only, and both ſpecies are abſolutely different from all thoſe of the Old World.

The lama and pacos ſeem to poſſeſs more perceptible marks of their ancient lineage, the firſt with the camel, and the ſecond with the ſheep. The lama, like the camel, has long legs, a very long neck, a light head, and the upper lip divided. He likewiſe reſembles the camel in mildneſs of diſpoſition, ſervility of ſpirit, ſobriety, and aptneſs for labour. Among the Americans, he was the firſt and the moſt uſeful of their domeſtic animals. He was employed, as the Arabs uſe the camel, for carrying burdens. To theſe conformities in the nature of the two animals, we may add the permanent marks of labour; for, though the back of the lama be not deform-

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ed with bunches, like that of the camel, he has natural callosities on his breast, because he has the same habit of reposing on that part of the body. Notwithstanding all these relations, the species of the lama is very different from that of the camel. The lama exceeds not in magnitude one-fourth or one-third of that of the camel. The figure of his body, the quality and colour of his hair, are also very different: His temperament is phlegmatic, and he delights in the mountains only. But the temperament of the camel is adust, and he lives spontaneously among burning sands. In fine, there are more specific differences, perhaps, between the camel and lama, than between the camel and giraffe. These three animals possess several common characters, by which they might be united into one genus. But, at the same time, they differ so much in other characters, that they cannot be supposed to have sprung from one another: They are neighbours, but not relations. The giraffe is almost double the height of the camel, and the camel is double that of the lama. The two first belong to the Old Continent, and form distinct species: Of course, the species of the lama, which is peculiar to the New World, is remote from both.

The same remark is not applicable to the pecari: Though of a different species from the hog, he belongs to the same genus. In figure, and almost every external relation, he resembles the hog; and differs from that animal only in some minute

minute characters, such as the aperture on his back, the figure of the stomach and intestines, &c. We might therefore be led to think, that the pecari had sprung from the same stem with the hog, and that he had formerly passed from the Old to the New World, where, by the influence of the soil, he had degenerated so greatly as now to form a distinct species.

With regard to the pacos, though it seems to have some relations to the sheep by its wool and habit of body, it differs so much in every other article, that they cannot be considered as allied species. The pacos is rather a small kind of lama, and appears not, from any character, to have ever passed from the one Continent to the other. Hence, of the four detached species peculiar to the New World, three, namely, the tapir, the cabiai, and the lama and pacos, appear to have been at all times proper to this Continent. But the pecari, which is the fourth, seems to be only a degenerated species of hog, and to have formerly derived its origin from the Old Continent.

From a similar examination and comparison of the ten genera, to which we have reduced the other animals peculiar to South America, we shall find not only singular relations in their nature, but marks of their ancient origin and degeneration. The sapajous and sagoins have so great a resemblance to the monkeys, that they have obtained the common name of ape. We have

have proved, however, that their ſpecies, and even their genera, are different. Beſides, it would be difficult to conceive how the monkeys of the Old World could aſſume, in America, a different figure of face, a long, muſcular, and prehenſile tail, a large partition between the noſtrils, and other characters both ſpecific and generic, by which we have diſtinguiſhed and ſeparated them from the ſapajous. But, as the apes, the baboons, and the monkeys, are peculiar to the Old World, the ſapajous and ſagoins ſhould be regarded as their repreſentatives in the New; for theſe animals have nearly the ſame form, both external and internal, and, in their manners and diſpoſitions, they poſſeſs many things in common. In the ſame manner, there are no makis in America, and yet they are repreſented by the opoſſums, or four-handed animals with ſharp muzzles, which are very numerous in the New Continent, but exiſt not in the Old. It muſt be remarked, however, that there is a much greater difference between the nature and form of the makis and theſe four-handed American animals, than between the monkeys and ſapajous; and that the interval between an opoſſum and a maki is ſo great, that we cannot think they ever proceeded from each other, without ſuppoſing that degeneration is capable of producing effects equal to thoſe of a new nature; for moſt of theſe American four-handed ſpecies have a pouch under the belly, ten cutting teeth in each jaw,

jaw, and a prehenſile tail; while the makis have no pouch under their belly, a flaccid tail, and only four cutting teeth in the upper, and ſix in the under jaw. Hence, though theſe animals have their hands and fingers conſtructed in the ſame manner, and likewiſe reſemble each other in the length of the muzzle, their ſpecies, and even their genera, are ſo different, that it is impoſſible to imagine they ever proceeded from one another, or that ſuch great and general diſparities could be produced by degeneration.

On the other hand, the American tigers, which we have treated of under the appellation of jaguars, couguars, ocelots, and margais, though different in ſpecies from the panther, leopard, ounce, and ſeveral of the Old Continent, unqueſtionably belong to the ſame genus. All theſe animals reſemble each other greatly, both externally and internally. They have alſo the ſame natural diſpoſitions, the ſame ferocity, the ſame vehement thirſt for blood; and, what makes them approach ſtill nearer in genus, thoſe of the ſame Continent differ more from each other, than from thoſe of the other Continent. For example, the African panther differs leſs from the Braſilian jaguar, than the latter differs from the couguar, though they belong to the ſame country. In the ſame manner, the Aſiatic ſerval and the margai of Guiana differ leſs from one another than from the ſpecies peculiar to their own continents. We may, therefore, con-

clude, that these animals have had a common origin, and that they have formerly passed from the one Continent to the other. Their actual differences have proceeded solely from the long continued influence of their new situation.

The mouffettes, or stinking weasels of America, and the European polecat, seem to belong to the same genus. In general, when a genus is common to both Continents, the species of which it is composed are more numerous in the Old than in the New. In this instance, however, the contrary takes place: In America, there are four or five species of polecats, while we have but one, whose nature seems to be inferior to that of all the others; so that the New World, in its turn, appears to have representatives in the Old; and, if we judged only from the fact, we should be led to think, that these animals had taken a contrary route, and passed from America into Europe. The same remark is applicable to some other species. The roebucks and the fallow-deer, as well as the mouffettes, are more numerous and likewise stronger in the New than in the Old Continent. We might, therefore, imagine that they are original natives of America. But, as we know that all animals were created in the Old Continent, we must necessarily admit their migration from the Old to the New World, and at the same time suppose, that, instead of degenerating, like all the other Ameri-

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can ſpecies, they have improved by the influences of the ſoil and climate.

The ant-eaters, which are ſingular creatures, and of which there are three or four ſpecies in the New World, appear alſo to have their repreſentatives in the Old. The ſcaly lizards reſemble the ant-eaters in the peculiar character of having no teeth, and of being obliged to ſtretch out their tongue and feed upon ants. But, if we aſſign them a common origin, it is ſtrange that, inſtead of ſcales, which they have in Aſia, they are covered with hair in America.

With regard to the agoutis, pacos, and other animals which conſtitute the ſeventh genus peculiar to the New Continent, they can only be compared with the hare and rabbit, from which, however, they all differ in ſpecies. It is difficult to aſſign them a common origin; becauſe the hare is diffuſed almoſt over every climate of the Old Continent, without undergoing any other change than in the colour of his hair. It is by no means probable, therefore, that the climate of America ſhould have ſo far changed the nature of our hares, as to make them tapetis and apereas, which have no tail; or agoutis with a ſharp muzzle, and ſhort round ears; or pacos with a large head, ſhort ears, and coarſe hair with white bands.

In fine, the coaitis, the armadillos, and the ſloths, differ ſo much not only in ſpecies, but in genus, from all the animals in the Old World,

that they can be compared to none of them, and that it is impoſſible to refer them to any common origin, or to aſcribe to the effects of degeneration the prodigious differences in their nature from that of any other animal.

Thus, of ten genera and four detached ſpecies, to which we have endeavoured to reduce all the animals peculiar to the New World, there are only two, namely, the genus of jaguars, ocelots, &c. and the ſpecies of the pecari, with their varieties, which can, with any degree of probability, be referred to the animals of the Old World. The jaguars and ocelots may be regarded as a ſpecies of the leopard or panther, and the pecari as a ſpecies of hog. There are alſo five genera and one detached ſpecies, namely, the ſpecies of the lama, the genera of ſapajous, ſagoins, mouſſettes, agoutis, and ant-eaters, which may be compared, though in an equivocal and very diſtant manner, with the camel, the monkeys, the polecat, the hare, and the ſcaly lizards; And, in fine, there remain four genera and two detached ſpecies, namely, the opoſſums, the coaitis, the armadillos, the ſloths, the tapir, and cabiai, which can neither be referred nor compared to any genera or ſpecies in the Old Continent. This ſeems to be a ſufficient proof, that the origin of theſe animals peculiar to the New World cannot be attributed to degeneration alone: However powerful we may ſuppoſe the effects of degeneration, we can never ſuppoſe, with any appear-

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ance of reaſon, that theſe animals were originally the ſame with thoſe of the Old Continent. It is more probable, that the two Continents were formerly united, and that the ſpecies which inhabited the New World, becauſe the ſoil and climate were moſt agreeable to their nature, were ſeparated from the others by the irruption of the waters, when they divided Africa from America. This is a natural cauſe; and ſimilar cauſes might be conceived which would produce the ſame effect. For example, if the ſea ſhould make an irruption into Aſia from eaſt to weſt, and ſeparate the ſouthern regions of Africa and Aſia from the reſt of the Continent, all the animals peculiar to theſe countries, as the elephant, the rhinoceros, the giraffe, the zebra, the orang-outang, &c. would be in the ſame ſituation with thoſe of South America. They would be entirely ſeparated from thoſe of the temperate regions, and could not be referred to an origin common to any of the ſpecies or genera which inhabit theſe countries, ſolely becauſe ſome imperfect reſemblances might be diſcovered between them.

Hence, to diſcover the origin of theſe animals, we muſt have recourſe to the period when the two Continents were united, and trace the firſt changes which have happened on the ſurface of the earth. We muſt, at the ſame time, conſider the two hundred ſpecies of quadrupeds as conſtituting thirty-eight families: And, though this is by no means the preſent ſtate of nature, but,

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on the contrary, a ſtate of much greater antiquity, which we can reach only by inductions and relations almoſt equally fugitive as time, that ſeems to have effaced their traces; we ſhall, however, endeavour to aſcend, by facts and monuments ſtill exiſting, to thoſe firſt ages of Nature, and to exhibit thoſe epochas which ſhall appear to be moſt clearly indicated.

END OF THE SEVENTH VOLUME.